NPort W2250/2150 User's Manual

First Edition, November 2004

www.moxa.com/product

Moxa Technologies Co., Ltd.
Tel: +886-2-8919-1230
Fax: +886-2-8919-1231
Web: www.moxa.com

MOXA Technical Support
Worldwide: support@moxa.com.tw
The Americas support@moxa.com

NPort W2250/2150 User's Manual

The software described in this manual is furnished under a license agreement and may be used only in accordance with the terms of that agreement.

Copyright Notice

Copyright © 2004 Moxa Technologies Co., Ltd.
All rights reserved.
Reproduction without permission is prohibited.

Trademarks

MOXA is a registered trademark of The Moxa Group.
All other trademarks or registered marks in this manual belong to their respective manufacturers.

Disclaimer

Information in this document is subject to change without notice and does not represent a commitment on the part of Moxa.

Moxa provides this document "as is," without warranty of any kind, either expressed or implied, including, but not limited to, its particular purpose. Moxa reserves the right to make improvements and/or changes to this manual, or to the products and/or the programs described in this manual, at any time.

Information provided in this manual is intended to be accurate and reliable. However, Moxa Technologies assumes no responsibility for its use, or for any infringements on the rights of third parties that may result from its use.

This product might include unintentional technical or typographical errors. Changes are periodically made to the information herein to correct such errors, and these changes are incorporated into new editions of the publication.

Table of Contents

Chapter 1 Introduction 1-1
Overview 1-2
Package Checklist 1-2
Product Features 1-3
Product Specifications 1-3
Serial Port Pin Assignments 1-4

Chapter 2 Getting Started 2-1
Panel Layout 2-2
Connecting the Hardware 2-3
Wiring Requirements 2-3
Connecting to the Network 2-3
Connecting the Power 2-4
Connecting to a Serial Device 2-4
LED Indicators 2-4

Chapter 3 Initial IP Configuration 3-1
Installation Procedure for First-time Users 3-2
Factory Default IP Address 3-2
ARP 3-2
Telnet Console 3-3
Serial Console (19200, n, 8, 1) 3-6

Chapter 4 Choosing the Proper Operation Mode 4-1
Overview 4-2
TCP Server Mode 4-2
TCP Client Mode 4-3
UDP Mode 4-3
Real COM Mode 4-4

Chapter 5 Web Console Configuration 5-1
Configuring Your Browser 5-2
Basic Settings 5-3
Time Settings 5-3
Web/Telnet Console 5-4
Network Settings 5-5
General Settings 5-5
Ethernet Configuration 5-6
WLAN Configuration 5-7
Serial Port Settings 5-10
Operation Modes 5-10
Communication Parameters 5-21
System Management 5-22
Accessible IP Settings 5-22
SNMP Agent 5-23
Auto Warning Settings 5-24
System Status 5-27
Change Password 5-28
Load Factory Default 5-29
Save/Restart 5-29

Chapter 6 Installing and Configuring the Software 6-1
Overview 6-2
Installing NPort COM Driver 6-2
Installing NPort Search Utility 6-5
Configuring NPort COM Driver 6-8
Configuring NPort Search Utility 6-13
Linux Real TTY and UNIX Fixed TTY Installation 6-14
Installing the Linux Real TTY driver 6-14
Installing the UNIX Fixed TTY Driver 6-17
Upgrading the Firmware 6-18

Appendix A SNMP Agents with MIB II & RS-232 Like Groups A-1

Appendix B Well Known Port Numbers B-1

Appendix C Federal Communication Commission Interference Statement C-1

Appendix D Service Information D-1
MOXA Internet Services D-2
Problem Report Form D-3
Product Return Procedure D-4

1

Introduction

Moxa's NPort W2250/2150 Series of wireless serial device servers give you an easy way to connect your RS-232/422/485 serial devices to a WLAN. The 1-port NPort W2150 and 2-port NPort W2250 are ideal for environments where a LAN is not available, or where serial devices are moved frequently.

The following topics are covered in this chapter:

- **Overview**
- **Package Checklist**
- **Product Features**
- **Product Specifications**
- **Serial Port Pin Assignments**

Overview

Moxa's NPort W2250/2150 wireless device servers are the ideal choice for connecting your RS-232/422/485 serial devices—such as PLCs, meters, and sensors—to a Wired Ethernet LAN and Wireless LAN. Your communications software will be able to access the serial devices from anywhere over a local LAN, WLAN, or the Internet. Moreover, the WLAN environment offers an excellent solution for applications in which the serial devices are moved frequently from place to place.

NPort W2250/2150 wireless serial device servers support automatic IP configuration protocols (DHCP, BOOTP) and manual configuration via a handy web browser console. Both IP configuration methods ensure quick and effective installation, and the NPort Windows Driver Manager Utility makes Port Mapping very convenient to configure.

An external antenna increases the range of the wireless connection. Users can position the adjustable antenna for maximum signal strength or even replace the antenna with their own for additional flexibility and scalability. This feature is particularly useful when a serial device is connected in a high interference area. As an added feature, a signal strength indicator is located on the front panel to make it easier to troubleshoot connection problems.

NPort W2250/2150 wireless serial device servers ensure the compatibility of network software that uses a standard network API by providing TCP Server Mode, TCP Client Mode, and UDP Mode. The Real COM/TTY drivers allow software that works with COM/TTY ports to be set up to work over a TCP/IP network in no time. This excellent feature preserves your software investment and lets you enjoy the benefits of networking your serial devices instantly.

To make your management task easier, the NPort W2250/2150 Series provides additional features, such as password authentication, IP filter, WEP support for 64-bit and 128-bit encryption, and SNMP support.

Package Checklist

NPort W2250/2150 is shipped with the following items:

Standard Accessories

- NPort W2250 or NPort W2150 x 1
- Documentation & Software CD
- RJ45 to RJ45 Ethernet cross-over cable
- RJ45 to male DB9 cable (CBL-RJ45M9-150)
- Power adaptor
- Warranty Booklet
- Quick Installation Guide

Optional Accessories

- DK-35A DIN-Rail Mounting Kit (35 mm)
- CBL-RJ45M9-150 (8-pin RJ45 to male DB9 cable; 150 cm)
- CBL-RJ45F9-150 (8-pin RJ45 to female DB9 cable; 150 cm)
- CBL-RJ45M25-150 (8-pin RJ45 to male DB9 cable; 150 cm)
- CBL-RJ45F25-150 (8-pin RJ45 to male DB9 cable; 150 cm)

NOTE: *Notify your sales representative if any of the above items is missing or damaged.*

Product Features

- Connect serial device to Wireless LAN network
- 802.11b Wireless LAN, compatible with 802.11g
- WEP support for 64-bit and 128-bit encryption
- Password authentication and IP filter
- Ad-Hoc mode
- 10/100M Ethernet for console
- 1 or 2 RS-232/422/485 ports, at up to 230.4 Kbps
- Versatile socket operation modes, including TCP Server, TCP Client, and UDP
- Easy-to-use Windows Utility for mass installation
- Supports Windows and Linux Real COM drivers
- LEDs for link power, and wireless signal strength

Product Specifications

WLAN

Standard Compliance	802.11b
Radio Frequency Type	DSSS
Tx Power	15 dBm ± 2 (CH1-Ch13), 12dBm ± 2 (CH14)
Rx Sensitivity	-84 dBm @ 11 Mbps, -87 dBm @ 5.5 Mbps, -89 dBm @ 2 Mbps , -91 dBm @ 1 Mbps
Transmission Rate	11 Mbps (max.) with auto fallback (11, 5.5, 2, 1 Mbps)
Transmission distance	Up to 100 meters (@ 11 Mbps, in open areas)
Security	WEP 64-bit/128-bit data encryption
Antenna Connector	Reverse SMA
Network Mode	Infrastructure mode, Ad-Hoc mode

LAN

Ethernet	10/100 Mbps, RJ45
Protection	Built-in 1.5 KV magnetic isolation

Serial

No. of ports	2 (NPort W2250) 1 (NPort W2150)
Interface	RS-232/422/485
Port Type	8-pin RJ45

Serial Communication Parameters

Parity	None, Even, Odd, Space, Mark
Data Bits	5, 6, 7, 8
Stop Bits	1, 1.5, 2
Flow Control	RTS/CTS, XON/XOFF, DTR/DSR
Transmission Speed	110 bps to 230.4 Kbps

Software Features

Protocols	ICMP, IP, TCP, UDP, DHCP, BOOTP, Telnet, SNMP, HTTP, SMTP
Utilities	Windows utility for Windows 98/ME/2000/XP/2003
Configuration	Web browser, serial/telnet console, or Windows utility

Power Requirements

Power Input	12-48 VDC
Power Consumption	250 mA @ 12V; 138 mA @ 24V

Mechanical Specifications

Material	Aluminum sheet metal (1 mm)

Environmental

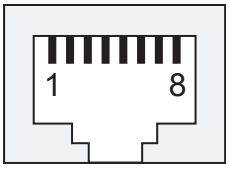
Operating Temperature	0 to 55°C (32 to 131°F), 5 to 95%RH
Storage Temperature	-20 to 85°C (-4 to 185°F), 5 to 95%RH

Regulatory Approvals

EMC	FCC Class A, CE Class A
Safety	UL, CUL, TÜV

Serial Port Pin Assignments

8-pin RJ45 Port



RS-232/422/485 Pinouts

Pin	RS-232	RS-422	RS-485 (4-wire)	RS-485 (2-wire)
1	DSR	---	---	---
2	RTS	TxD+	TxD+	---
3	GND	GND	GND	GND
4	TxD	TxD-	TxD-	---
5	RxD	RxD+	RxD+	Data+
6	DCD	RxD-	RxD-	Data-
7	CTS	---	---	---
8	DTR	---	---	---

2

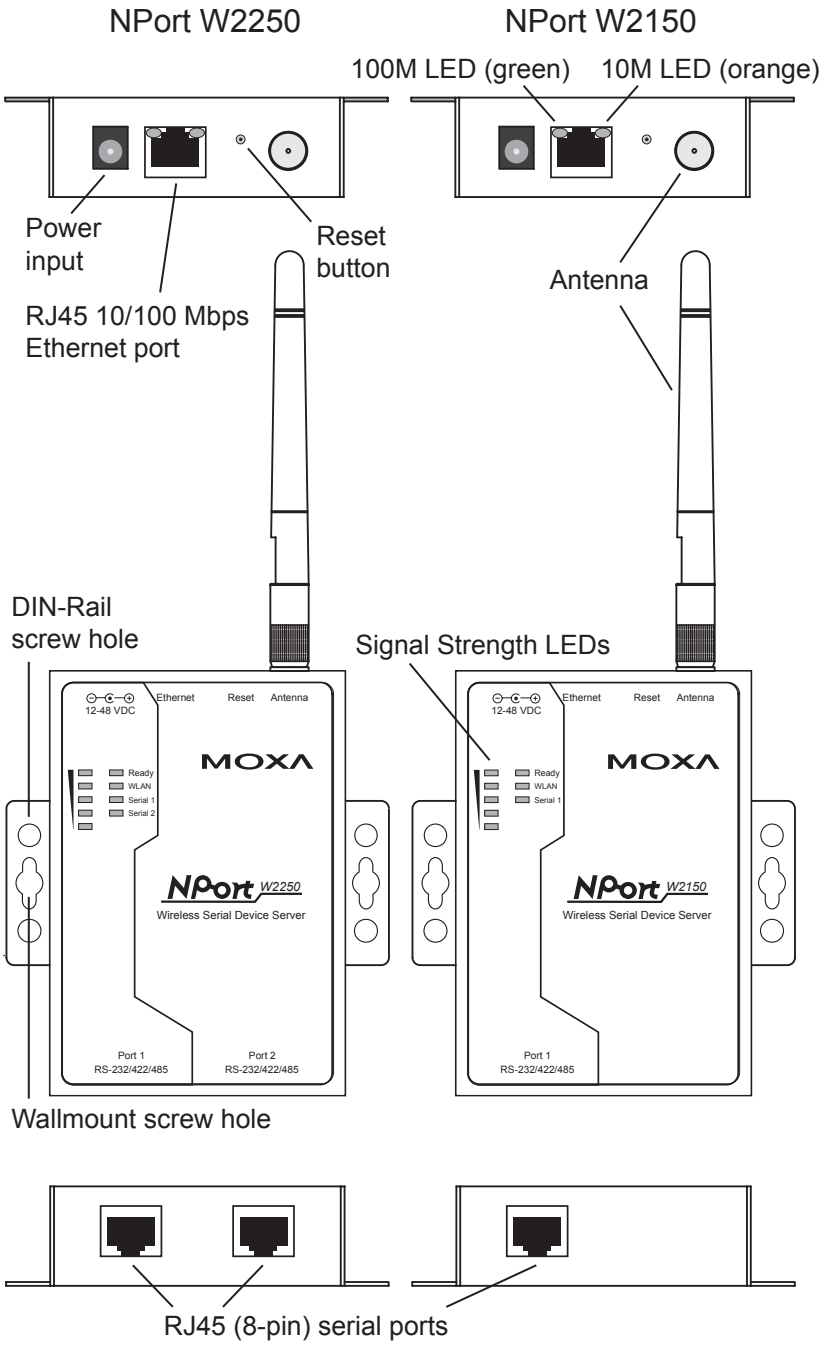
Getting Started

This chapter includes information about installing NPort W2250/2150.

The following topics are covered in this chapter:

- **Panel Layout**
- **Connecting the Hardware**
  - Wiring Requirements
  - Connecting to the Network
  - Connecting the Power
  - Connecting to a Serial Device
  - LED Indicators

Panel Layout



Connecting the Hardware

This section describes how to connect NPort W2250/2150 to serial devices for first time testing purposes. We cover Wiring Requirements, Connecting the Power, Connecting to the Network, Connecting to a Serial Device, and LED Indicators.

Wiring Requirements

ATTENTION

Safety First!

Be sure to disconnect the power cord before installing and/or wiring your device.

Wiring Caution!

Calculate the maximum possible current in each power wire and common wire. Observe all electrical codes dictating the maximum current allowable for each wire size.

If the current goes above the maximum ratings, the wiring could overheat, causing serious damage to your equipment.

Temperature Caution!

Be careful when handling the device. When plugged in, the device's internal components generate heat, and consequently the casing may feel hot to the touch.

You should also pay attention to the following items:

- Use separate paths to route wiring for power and devices. If power wiring and device wiring paths must cross, make sure the wires are perpendicular at the intersection point.

  NOTE: Do not run signal or communication wiring and power wiring in the same wire conduit. To avoid interference, wires with different signal characteristics should be routed separately.
- Use the type of signal transmitted through a wire to determine which wires should be kept separate. The rule of thumb is that wiring that shares similar electrical characteristics can be bundled together.
- Keep input wiring and output wiring separate.
- Where necessary, it is advisable to label the wiring to all devices in the system.

Connecting to the Network

Connect one end of the Ethernet cable to NPort W2250/2150's 10/100M Ethernet port and the other end of the cable to the Ethernet network. If the cable is properly connected, NPort W2250/2150 will indicate a valid connection to the Ethernet in the following ways:

- The Ethernet LED maintains a solid green color when connected to a 100 Mbps Ethernet network.
- The Ethernet LED maintains a solid orange color when connected to a 10 Mbps Ethernet network.
- The Ethernet LED will flash when Ethernet packets are being transmitted or received.

Connecting the Power

Connect the 12-48 VDC power line with NPort W2250/2150's power jack. When the power is properly supplied, the "Ready" LED will show a solid red color until the system is ready, at which time the "Ready" LED will change to a green color.

Connecting to a Serial Device

Connect the serial data cable between NPort W2250/2150 and the serial device. Serial data cables are optional accessories for NPort W2250/2150. Refer to Chapter 1 under **Optional Accessories** in the **Ordering Information** section for information about the RJ45-to-DB25 and RJ45-to-DB9 cables.

LED Indicators

Top Panel LED Indicators

Name	Color	Function
Ready	red	Steady on: Power is on and NPort is booting up. Blinking: Indicates a LAN IP conflict, or that the DHCP or BOOTP server did not respond properly.
	green	Steady on: Power is on and NPort is functioning normally. Blinking: The device server has been located by the NPort Search Utility.
	off	Power is off, or a power error condition exists.
WLAN	green	Steady on: Wireless enabled. Blinking: Indicates a WLAN IP conflict, or that the DHCP or BOOTP server did not respond properly.
Serial 1 Serial 2	orange	Serial port is receiving data.
	green	Serial port is transmitting data.
	off	No data is being transmitted or received through the serial port.
Signal Strength (5 LEDS)	green	The number of lit LEDS indicates the WLAN signal strength. When [0 / 1 / 2 / 3 / 4 / 5] LEDs are lit, the corresponding WLAN status is [Connection Fail / Bad / Fair / Good / Very Good / Excellent].

End Panel LED Indicators

Name	Color	Function
Ethernet	orange	10 Mbps Ethernet connection.
	green	100 Mbps Ethernet connection.
	off	Ethernet cable is disconnected, or has a short.

3

Initial IP Configuration

When setting up your NPort W2250/2150 for the first time, the first thing you should do is configure the IP address. Select one of the initial IP Address configuration methods to configure NPort W2250/2150's IP Address. For more details about network settings, see the **Network Settings** section from Chapter 5, **Web Console Configuration**.

This chapter covers the following topics:

- **Installation Procedure for First-time Users**
- **Factory Default IP Address**
- **ARP**
- **Telnet Console**
- **Serial Console (19200, n, 8, 1)**

Installation Procedure for First-time Users

STEP 1: After removing NPort from the box, use a cross-over Ethernet cable to connect directly to your computer's Ethernet port.

STEP 2: Attach the power adaptor to the NPort and then plug the adaptor into an electrical outlet.

STEP 3: Use the Web console to configure the NPort W2250/2150 via the Ethernet port.

NOTE

Web Console
We recommend that you use the web console to configure NPort W2250/2150. See Chapter 5 for instructions on how to use the web console.

Network Interface
Only one Network Interface can be used at the same time. If the Ethernet Link is active, then the WLAN will be disabled. If the WLAN is active, then the Ethernet Link will be disabled.

Connect First!
You must connect the Ethernet cable first before powering up your NPort.

Factory Default IP Address

NPort W2250/2150 is configured with the following default IP addresses:

LAN:

Setting	static IP
IP Address	192.168.126.254
Netmask	255.255.255.0

→ If the Ethernet port is unable to get an IP address from the DHCP server, then the IP address/netmask will revert to 192.168.126.254/255.255.255.0.

WLAN:

Setting	static IP
IP Address	192.168.127.254
Netmask	255.255.255.0

→ If the WLAN port is unable to get an IP address from the DHCP server, then the IP address/netmask will revert to 192.168.127.254/255.255.255.0

NOTE If you forget the IP address, you can use the NPort Search utility (from your PC) to locate the NPort W2250/2150 unit over the network. You will be able to view the IP address on the screen.

ARP

The ARP (Address Resolution Protocol) command can be used to set up an IP address for your NPort W2250/2150. The ARP command tells your computer to associate the NPort W2250/2150's MAC address with the intended IP address. You must then use Telnet to access the NPort W2250/2150, at which point the device server's IP address will be reconfigured.

This function only applies to default IP addresses.

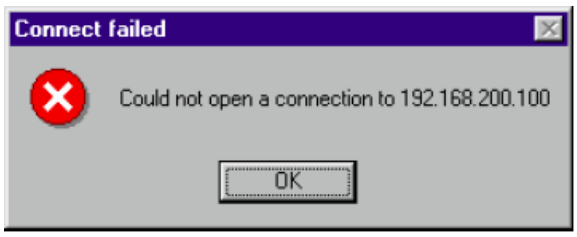
Take the following steps to use ARP to configure the IP address:

1. Obtain a valid IP address for your NPort W2250/2150 from your network administrator.

2. Obtain NPort W2250/2150's MAC address from the label on its bottom panel.
3. Execute the 'arp -s' command from your computer's MS-DOS prompt by typing:

   ```
   arp -s 192.168.200.100 00-90-E8-xx-xx-xx
   ```

   This is where 192.168.200.100 is the new IP address and 00-90-E8-xx-xx-xx is the MAC address for your NPort W2250/2150. You will need to change both numbers, as described above in items 1 and 2.
4. Next, execute a special Telnet command by typing: telnet 192.168.200.100 6000 After issuing this command, a **Connect failed** message will appear, as shown below. After the NPort W2250/2150 reboots, its IP address should be updated to the new address. You can reconnect using either Telnet, the Web, or Utility to check that the update was successful.



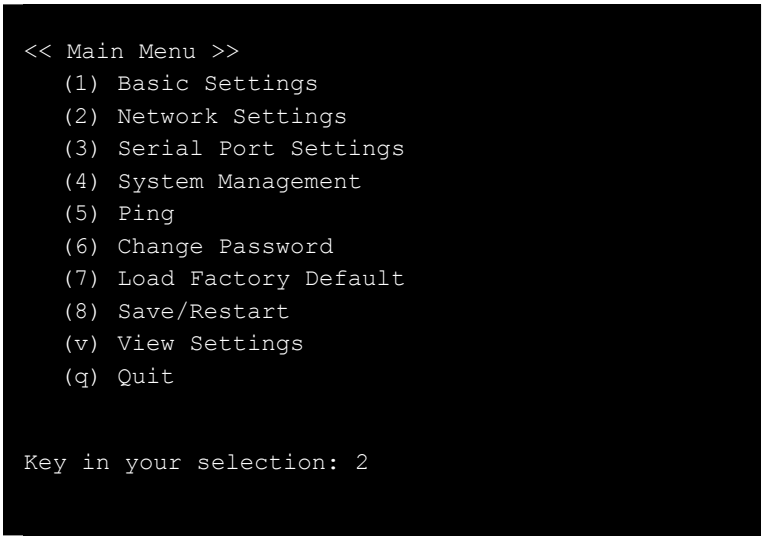
Telnet Console

1. From the Windows desktop, click on **Start** and then selecte **Run**
2. Type telnet 192.168.126.254 (default IP address) in the **Open** text input box, and then click on **OK**.

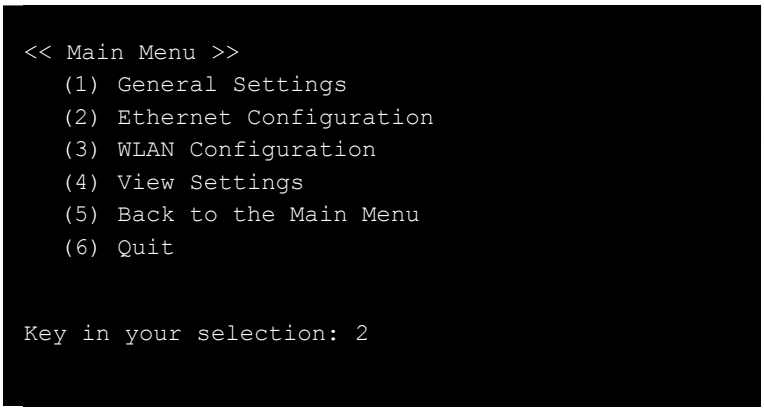
   When the Telnet window opens, if you are prompted to input the Console password, input the password and then press Enter .Note that this page will only appear if the NPort W2250 is password protected.

```
---------------------------------
Model Name        : NPort W2250
Serial No         : 00010
Ethernet IP   : 192.168.126.254
WLAN IP       : 192.168.127.254
WLAN Status   : Infrastructure Mode
WLAN SSID         : default
---------------------------------
<< Main Menu >>
   (1) Basic Settings
   (2) Network Settings
   (3) Serial Port Settings
   (4) System Management
   (5) Ping
   (6) Change Password
   (7) Load Factory Default
   (8) Save/Restart
   (v) View Settings
   (q) Quit
```

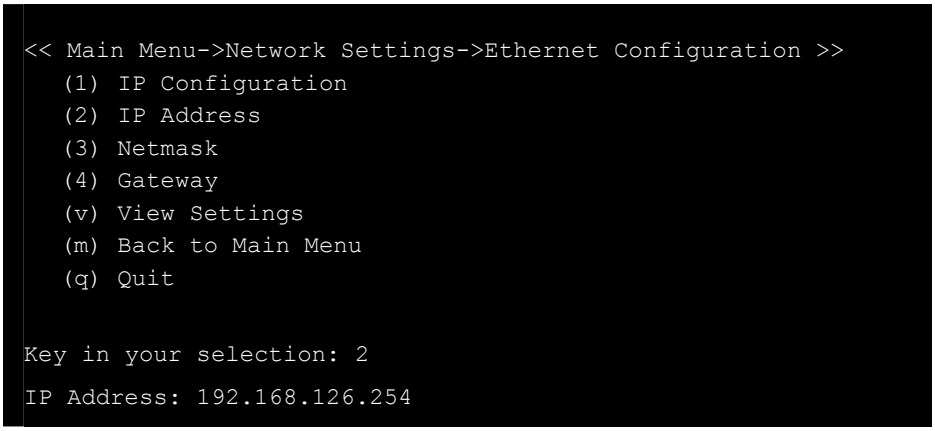
3. Type **2** to select **Network settings**, and then press **Enter**.



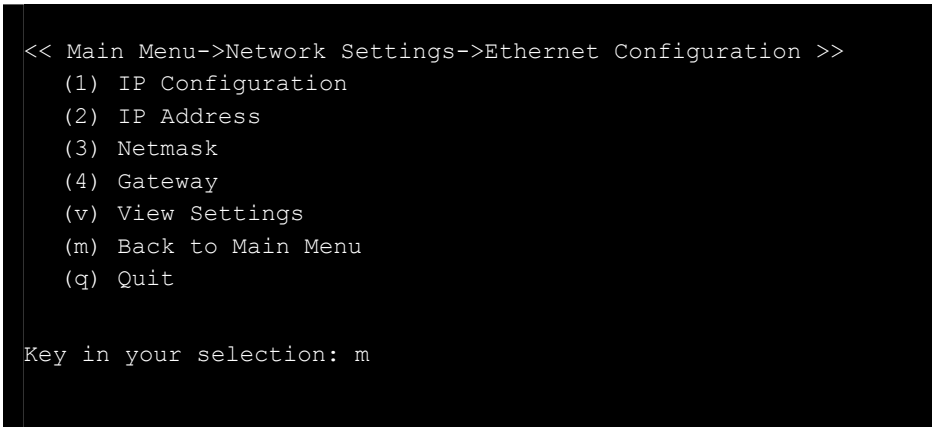
4. Type **2** to select **Ethernet Configuration** and then press **Enter**.



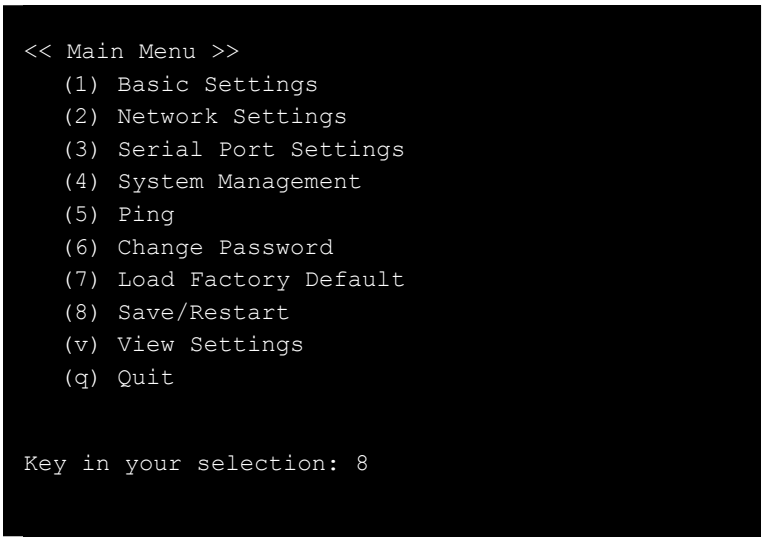
5. Type **2** to select **IP Address** and then press **Enter**, then use the **Backspace** key to erase the current IP address, type in the new IP address, and then press **Enter**.



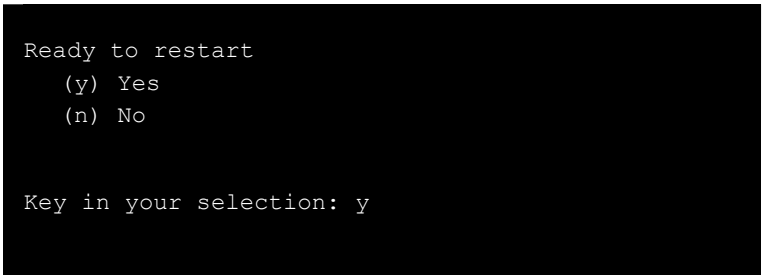
6. Type **m** and then press **Enter** to return to the main menu.



7. Type **8** and then press **Enter** to **Save/Restart** the system.



8. Type **y** and then press **Enter** to save the new IP address and restart NPort W2250/W2150.

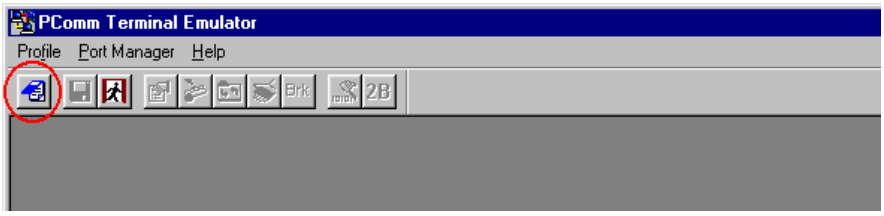


Serial Console (19200, n, 8, 1)

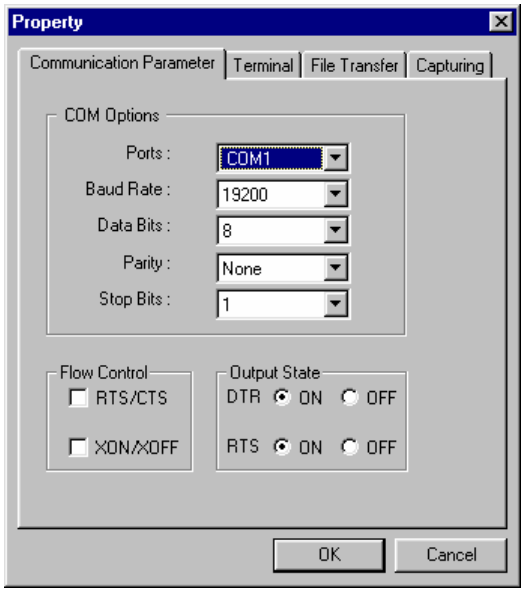
Before configuring the NPort W2250/2150 via the serial console, turn off the power and use a serial cable to connect the NPort W2250/2150 to your computer's serial port.

We suggest using MOXA PComm Terminal Emulator, which can be downloaded free of charge from www.moxa.com, to carry out the configuration procedure.

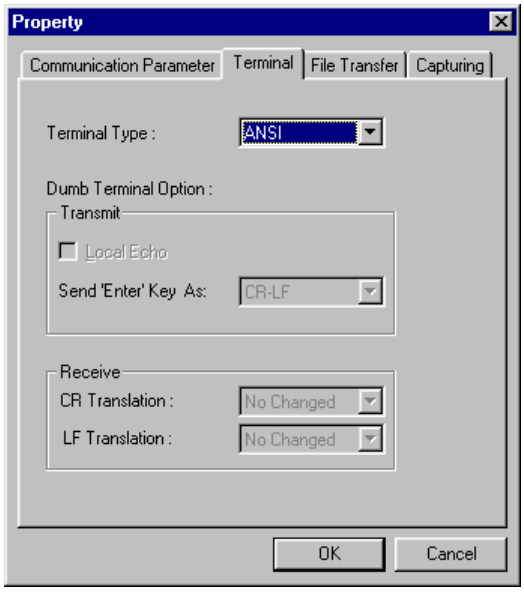
1. Connect NPort W2250/2150's serial port 1 directly to your computer's male RS-232 serial port.
2. From the Windows desktop, click on **Start → Programs → PComm Lite → Terminal Emulator**.
3. When the **PComm Terminal Emulator** window opens, first click on the **Port Manager** menu item and select **Open**, or click on the **Open** icon.



4. The **Property** window opens automatically. From the **Communication Parameter** page, select the appropriate COM port for the connection, **COM1** in this example, and **19200** for **Baud Rate**, **8** for **Data Bits**, **None** for **Parity**, and **1** for **Stop Bits**.



5. From the **Property** window's **Terminal** page, select **ANSI** or **VT100** for **Terminal Type**, and click on **OK**. If you select **Dumb Terminal** as the terminal type, some of the console functions—especially the "Monitor" function—may not work properly.



6. Press the "`" key (located in the upper left corner of the keyboard) continuously while powering on the NPort W2250/2150.

7. Sending a continuous "`" string to NPort W2250/W2150 triggers it to switch automatically from data mode to console mode.

8. Input the password when prompted. Note that this page will only appear when the NPort W2250/2150 has been set up for password protection.

9. Start by configuring the IP address under **Network Settings**. Refer to the **Telnet Console** section for instructions on how to configure the rest of the IP settings.

4

Choosing the Proper Operation Mode

In this chapter, we describe the various NPort W2250/2150 operation modes. The options include an operation mode that uses a driver installed on the host computer, and operation modes that rely on TCP/IP socket programming concepts. After choosing the proper operation mode in this chapter, refer to Chapter 5 for detailed configuration parameter definitions.

This chapter covers the following topics:

- **Overview**
- **TCP Server Mode**
- **TCP Client Mode**
- **UDP Mode**
- **Real COM Mode**

Overview

NPort W2250/2150 wireless Serial Device Servers are used to network-enable traditional RS-232/422/485 devices. A Serial Device Server is a tiny computer equipped with a CPU, real-time OS, and TCP/IP protocols that can bi-directionally translate data between the serial and Ethernet formats. The Serial Device Server lets you use a computer to access, manage, and configure remote facilities and equipment over the Internet from anywhere in the world.

Traditional SCADA and data collection systems rely on serial ports (RS-232/422/485) to collect data from different types of instruments. Since NPort W2250/2150 wireless Serial Device Servers network-enable instruments equipped with an RS-232/422/485 communication port, your SCADA and data collection system will be able to access all instruments connected to a standard TCP/IP network, regardless of whether the devices are used locally or at a remote site.

In addition to providing socket access, NPort W2250/2150 also comes with a Real COM/TTY driver that transmits all serial signals intact. This means that you can continue using existing COM/TTY-based software, eliminating the need to invest in additional, costly software.

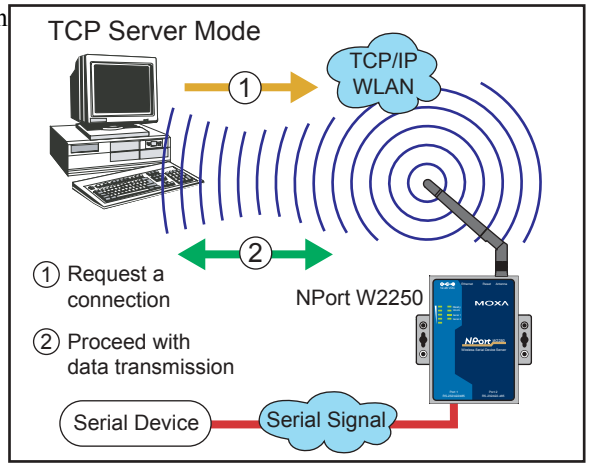
Three different Socket Modes are available: TCP Server, TCP Client, and UDP Server/Client. The main difference between the TCP and UDP protocols is that TCP guarantees delivery of data by requiring the recipient to send an acknowledgement to the sender. UDP does not require this type of verification, making it possible to offer speedier delivery. UDP lets you unicast to one IP address, or multicast to groups of IP addresses.

TCP Server Mode

In TCP Server mode, NPort W2250/2150 is configured with a unique IP:Port address on a TCP/IP network. NPort W2250/2150 waits passively to be contacted by the host computer, allowing the host computer to establish a connection with and get data from the serial device. This operation mode also supports up to 4 simultaneous connections, so that multiple hosts can collect data from the same serial device—at the same time.

As illustrated in the figure, data transmission proceeds as follows:

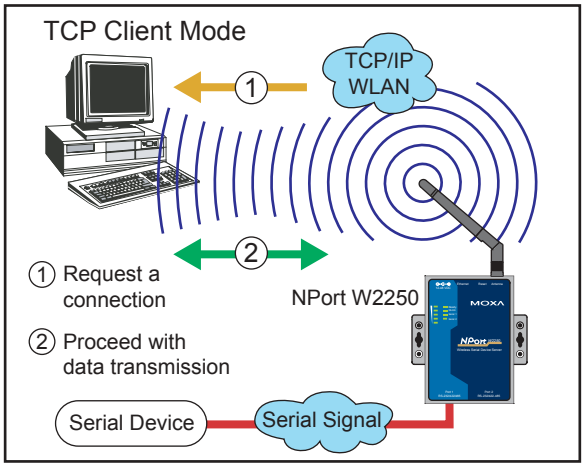
1. The host requests a connection from the NPort W2250/2150 configured for TCP Server Mode.
2. Once the connection is established, data can be transmitted in both directions—from the host to the NPort W2250/2150, and from the NPort W2250/2150 to the host.



TCP Client Mode

In TCP Client mode, NPort W2250/2150 can actively establish a TCP connection to a pre-defined host computer when serial data arrives.

After the data has been transferred, NPort W2250/2150 can disconnect automatically from the host computer by using the **TCP alive check time** or **Inactivity time** settings. Refer to Chapter 5 for more details

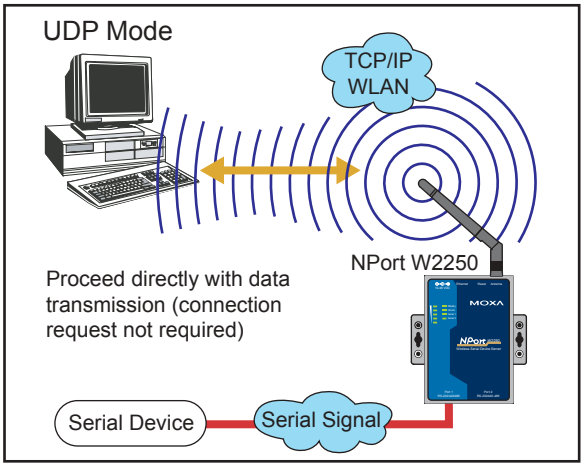


As illustrated in the figure, data transmission proceeds as follows:

1. The NPort W2250/2150 requests a connection to the host.
2. Once the connection is established, data can be transmitted in both directions—from the host to the NPort W2250/2150, and from the NPort W2250/2150 to the host.

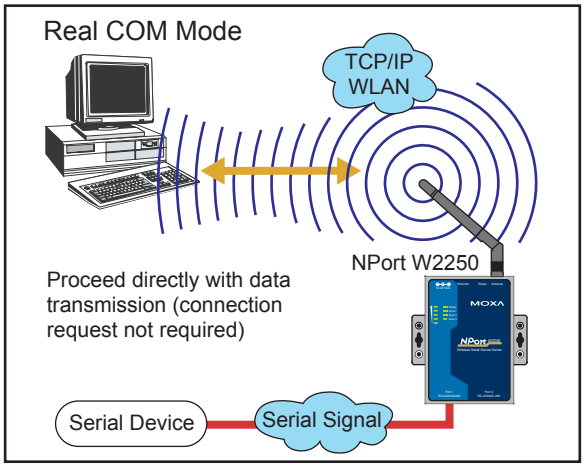
UDP Mode

Compared to TCP communication, UDP is faster and more efficient. In UDP mode, you can unicast or multicast data from the serial device to one or more host computers. The serial device can also receive data from multiple host computers, making this mode ideal for message display applications.



Real COM Mode

NPort W2250/2150 comes equipped with COM drivers that work with Windows 95/98/ME/NT/2000/XP systems. The driver establishes a transparent connection between host and serial device by mapping the IP of the NPort W2250/2150's serial port to a local COM port on the host computer.



One of the main conveniences of using Real COM Mode is that Real COM Mode allows users to continue using RS-232/422/485 serial communications software that was written for pure serial communications applications. The driver intercepts data sent to the host's COM port, packs it into a TCP/IP packet, and then redirects it through the host's Ethernet card. At the other end of the connection, the NPort W2250/2150 accepts the Ethernet frame, unpacks the TCP/IP packet, and then transparently sends it to the appropriate serial device attached to one of the NPort W2250/2150's serial ports.

ATTENTION

Real COM Mode allows several hosts to have access control of the same NPort W2250/2150. The driver that comes with your NPort W2250/2150 controls host access to attached serial devices by checking the host's IP address. Refer to **Accessible IP Settings** in Chapter 5 for more details.

5

Web Console Configuration

The Web Console is the most user-friendly method available to configure NPort W2250/2150. This chapter introduces the Web Console function groups and function definitions.

The following topics are covered in this chapter:

- **Configuring Your Browser**
- **Basic Settings**
  - Time Settings
  - Web/Telnet Console
- **Network Settings**
  - General Settings
  - Ethernet Configuration
  - WLAN Configuration
- **Serial Port Settings**
  - Operation Modes
  - Communication Parameters
- **System Management**
  - Accessible IP Settings
  - SNMP Agent
  - Auto Warning Settings
  - System Status
- **Change Password**
- **Load Factory Default**
- **Save/Restart**

NOTE You may use either a cross-over or straight-through Ethernet cable to connect NPort W2250/2150 to a PC, Hub, or Switch. NPort W2250/2150's Ethernet port will auto-detect which type of cable is being used, and then adjust the signals accordingly.

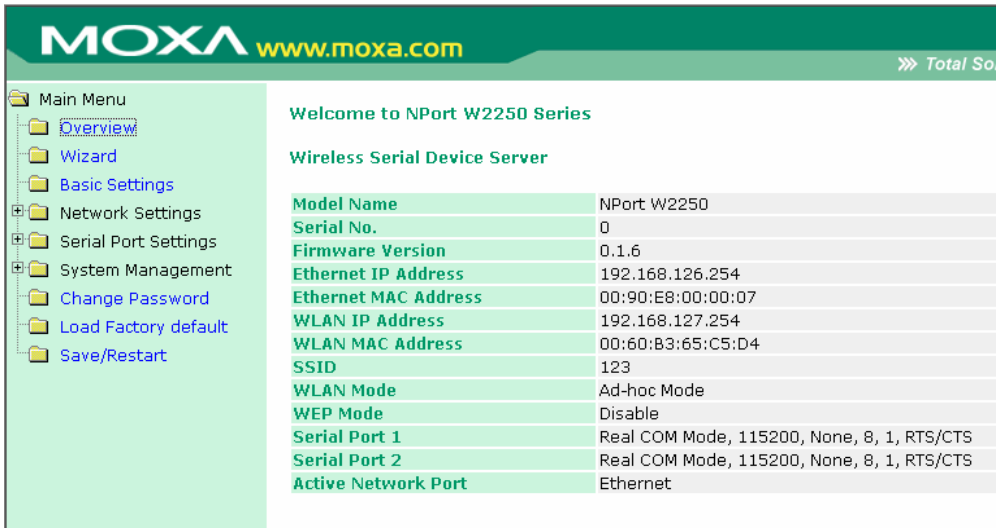
Configuring Your Browser

Before opening your browser, you need to enable cookies.

ATTENTION

To use the Web Console, you will need to **enable your browser for cookies**. Your browser's cookie options should be located on your browser's Internet Properties window. Since different browsers, and different versions of the same browser are configured differently, refer to your browser's help section for details.

1. Type 192.168.126.254 (the default IP address) in your browser's **Address** box (use the correct IP address if different from the default), and then press **Enter**.
2. Input the password if prompted. The password will be transmitted with MD5 encryption over the Ethernet. Note that you will not be prompted to enter the password if the NPort W2250/2150 is not currently password protected.
3. The NPort W2250/2150 homepage will open. On this page, you can see a brief description of the Web Console's nine function groups.



ATTENTION

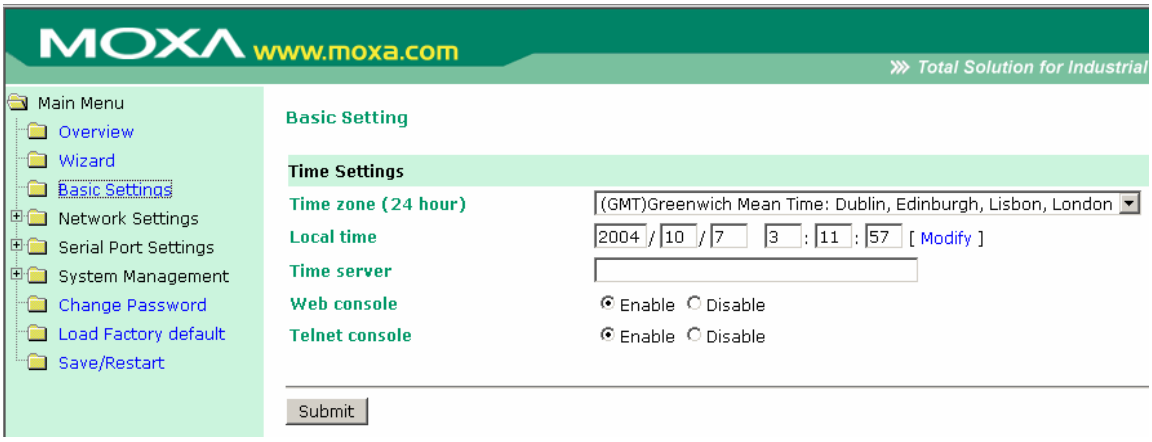
If you don't remember the password, the ONLY way to start configuring NPort W2250/2150 is to load factory defaults by using the Reset button, which is located near the NPort's RJ45 Ethernet port.

ATTENTION

If you use a web browser other than Internet Explorer, remember to Enable the functions to "allow cookies that are stored on your computer" or "allow per-session cookies."

NPort W2250/2150 uses cookies only for "password" transmission.

Basic Settings



Time Settings

NPort W2250/2150 has a built-in Real-Time Clock that allows you to add real-time information to functions such as Auto warning "Email" or "SNMP Trap."

ATTENTION

First time users should select the time zone first. The Console will display the "real time" according to the time zone compared to GMT. If you would like to modify the real time clock, select "Local time." NPort W2250/2150's firmware will modify the GMT time according to the Time Zone.

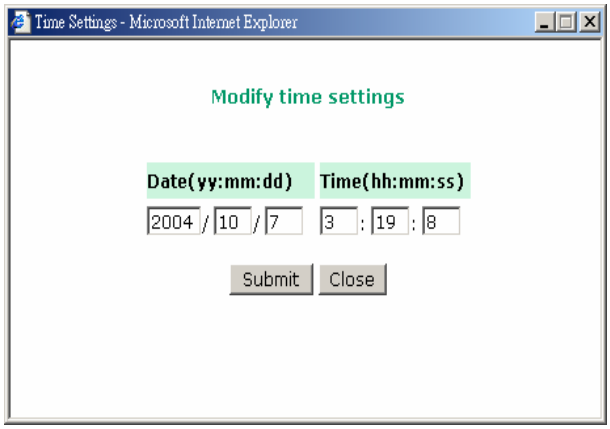
Time zone (24 hour)

Setting	Factory Default	Necessity
User selectable time zone	GMT (Greenwich Mean Time)	Optional

Local time

Setting	Factory Default	Necessity
User adjustable time (1900/1/1-2037/12/31)	GMT (Greenwich Mean Time)	Optional

Click on the **[Modify]** button to open the Modify time settings window to input the correct local time.



Time server

Setting	Factory Default	Necessity
IP Address or Domain Name (E.g., 192.168.1.1, time.stdtime.gov.tw, or time.nist.gov)	None	Optional

NPort W2250/2150 uses SNTP (RFC-1769) for auto time calibration.

Input the correct "Time server" IP address or domain name. Once NPort W2250/2150 is configured with the correct Time server address, NPort W2250/2150 will request time information from the "Time server" every 10 minutes.

Web/Telnet Console

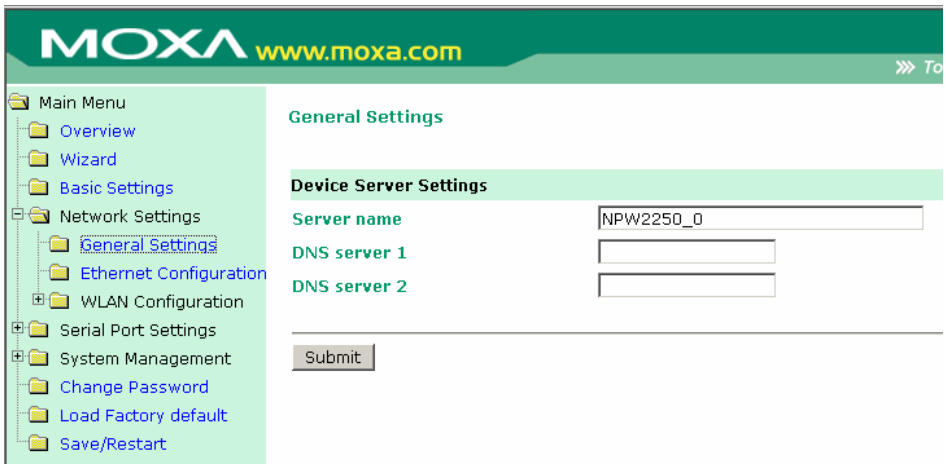
The "Disable" option for "Web Console" and "Telnet Console" is included for security reasons. In some cases, you may want to Disable one or both of these console utilities as an extra precaution to prevent unauthorized users from accessing your NPort W2250/2150. The factory default for both Web console and Telnet console is **Enable**.

Web/Telnet Console

Setting	Factory Default	Necessity
Enable or Disable	Enable	Required

Network Settings

General Settings



Click on the **General Settings** option to modify the **Server name** and **DNS server** IP addresses or domain names.

Server name

Setting	Factory Default	Necessity
Alphanumeric	NPW2250_<Serial No.>, or NPW2150_<Serial No.>	Optional

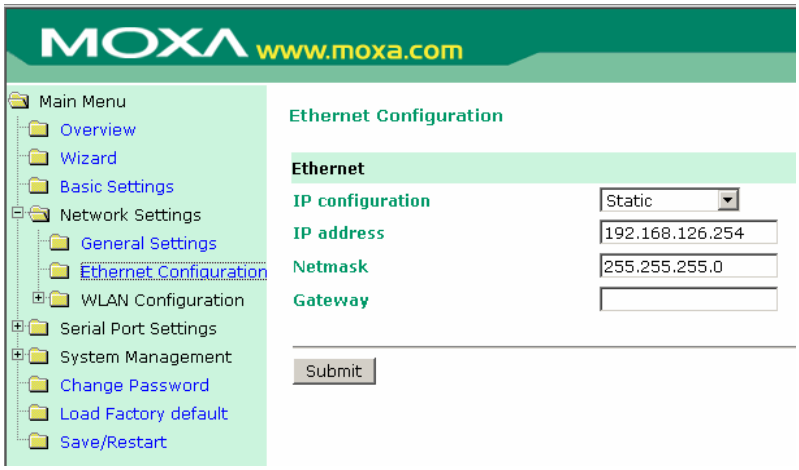
DNS server 1 / DNS server 2

Setting	Factory Default	Necessity
E.g., 192.168.1.1 (IP addresses of the form *x.x.x.0* and *x.x.x.255* are invalid.	None	Optional

When a user wishes to visit a particular website, the computer first requests the website's correct IP address from the Domain Name System (DNS) server, and then the computer uses the response to connect to the website. DNS represents the method used to translate Internet domain names into IP addresses. A domain name is an alphanumeric name, such as moxa.com, that it is easier to remember. A DNS server is a host that translates this kind of text-based domain name into the numeric IP address used to establish a TCP/IP connection.

In order to use NPort W2250/2150's DNS feature, you need to configure the DNS server. Doing so allows NPort W2250/2150 to use a host's domain name to access the host. NPort W2250/2150 provides DNS server 1 and DNS server 2 configuration items to configure the IP address of the DNS server. DNS Server 2 is included for use when DNS sever 1 is unavailable.

Ethernet Configuration



You must assign a valid IP address to NPort W2250/2150 before it will work in your network environment. Your network system administrator should provide you with an IP address and related settings for your network. The IP address must be unique within the network (otherwise, NPort W2250/2150 will not have a valid connection to the network). First time users should refer to Chapter 3, "Initial IP Address Configuration," for more information.

Choose from four possible "IP configuration" modes—**Static, DHCP, DHCP/BOOTP, and BOOTP**—located under the web console screen's **IP configuration** drop-down box.

IP configuration

Method	Function Definition
Static	User defined IP address, Netmask, Gateway.
DHCP	DHCP Server assigned IP address, Netmask, Gateway, DNS, and Time Server.
DHCP/BOOTP	DHCP Server assigned IP address, Netmask, Gateway, DNS, and Time Server, or BOOTP Server assigned IP address (if the DHCP Server does not respond).
BOOTP	BOOTP Server assigned IP address.

IP address

Setting	Factory Default	Necessity
E.g., 192.168.1.1 (IP addresses of the form *x.x.x.0* and *x.x.x.255* are invalid.	192.168.126.254	Required

An IP address is a number assigned to a network device (such as a computer) as a permanent address on the network. Computers use the IP address to identify and talk to each other over the network. Choose a proper IP address that is unique and valid in your network environment.

Netmask

Setting	Factory Default	Necessity
E.g., 255.255.255.0	255.255.255.0	Required

A netmask is used to group network hosts into subnets. When a packet is sent out over the network, the NPort W2250/2150 will use the netmask to check whether the desired TCP/IP host specified in the packet is on the same subnet as the NPort. If the address is on the same subnet, a connection is established directly between the NPort W2250/2150 and the host. If the host is not on the same subnet, the packet is sent to the Gateway address.

Gateway

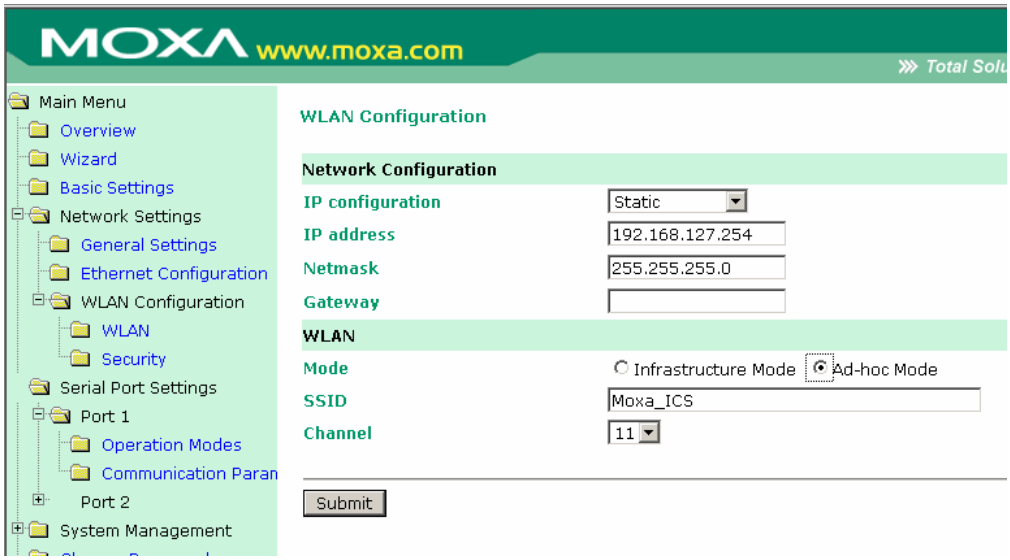
Setting	Factory Default	Necessity
E.g., 192.168.1.1	None	Optional

A gateway is a network gateway that acts as an entrance to another network. Usually, the computers that control traffic within the network or at the local Internet service provider are gateway nodes. NPort W2250/2150 needs to know the IP address of your network's default gateway computer in order to communicate with the hosts outside the local network environment. For correct gateway IP address information, consult your network administrator.

ATTENTION

In dynamic IP environments, the firmware will make 3 requests to the DHCP or BOOTP server every 30 seconds until network settings are assigned by the DHCP or BOOTP server. The Timeout for each try increases from 1 second, to 3 seconds, to 5 seconds. If the DHCP/BOOTP Server is unavailable, the firmware will use the default IP address (192.168.126.254), Netmask, and Gateway for IP settings.

WLAN Configuration



Network Configuration

NPort W2250/2150 supports the IEEE 802.11b wireless network interface.

The supported IP configurations are static and dynamic (BOOTP , DHCP, or BOOTP+DHCP). Users can set up the IP configuration via the serial console, or the Web/Telnet consoles through the NPort's Ethernet interface.

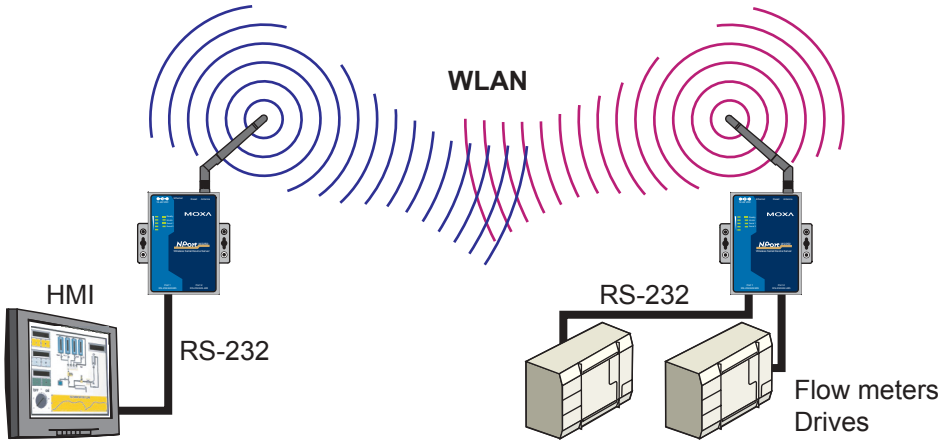
For detailed information about configuring **IP configuration**, **IP address**, **Netmask**, and **Gateway**, see the previous section, "Ethernet Configuration."

WLAN

You may choose from two different WLAN modes—Infrastructure Mode and Ad-hoc Mode—which are illustrated in the following diagrams.

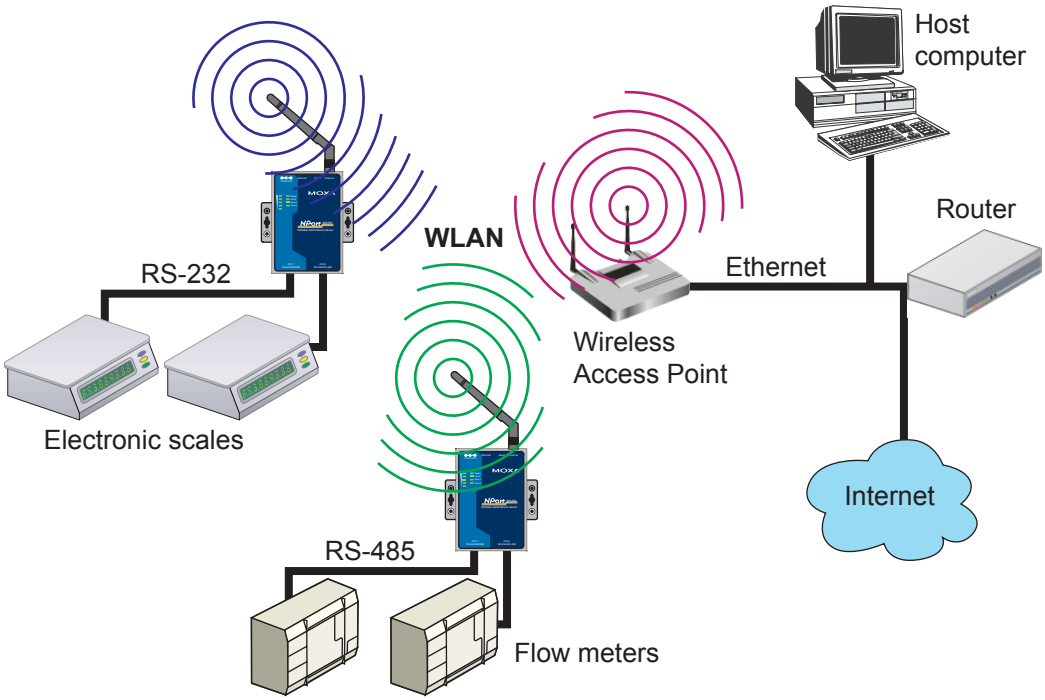
Ad-hoc Mode

In the following example, two NPort W2250/2150 devices establish an Ad-hoc peer-to-peer relationship, which means that they communicate with each other directly, without going through an AP (Access Point).



Infrastructure Mode

In the following example, the NPort W2250/2150 communicates with the host computer via the AP. The host computer connects to the AP via an Ethernet connection, allowing serial data to be transmitted back and forth between the serial devices and host computer.



SSID

Enter the name of the wireless network (SSID) that the W2250/2150 is connected to.

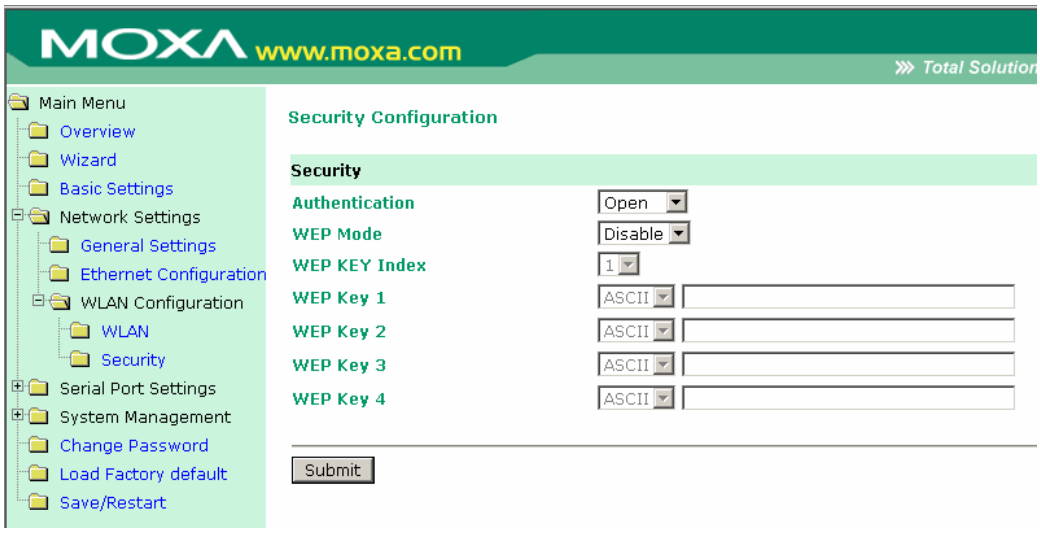
Channel

Select a radio channel for the wireless network from the pull-down menu. In infrastructure mode, the AP will specify the channel automatically. In Ad-hoc mode, the user must use the pull-down menu to specify the channel.

ATTENTION

Click on the Wizard to configure the WLAN IP address quickly.

Security



The wireless network interface supports data encryption (WEP, 64 or 128 bits) and authentication (Open or Shared authentication).

Authentication

Select an authentication scheme of **Open** or **Shared** from the pull-down menu.

WEP Mode

By default, WEP Mode is **disabled**. When WEP Mode is **enabled**, data packets will be encrypted before send .you can select 64-bit or 128-bit.

WEP Key Index

Selects the Primary WEP Key for your wireless network.

WEP Key 1/2/3/4

For each of the four WEP Keys, select either **ASCII** or **HEX** format, and then enter the appropriate WEP Key. The WEP Keys are used to help prevent data from being stolen as it is transmitted over public networks. The WEP Key setting(s) for the NPort W2250/2150 must be the same as the WEP Key settings for the AP.

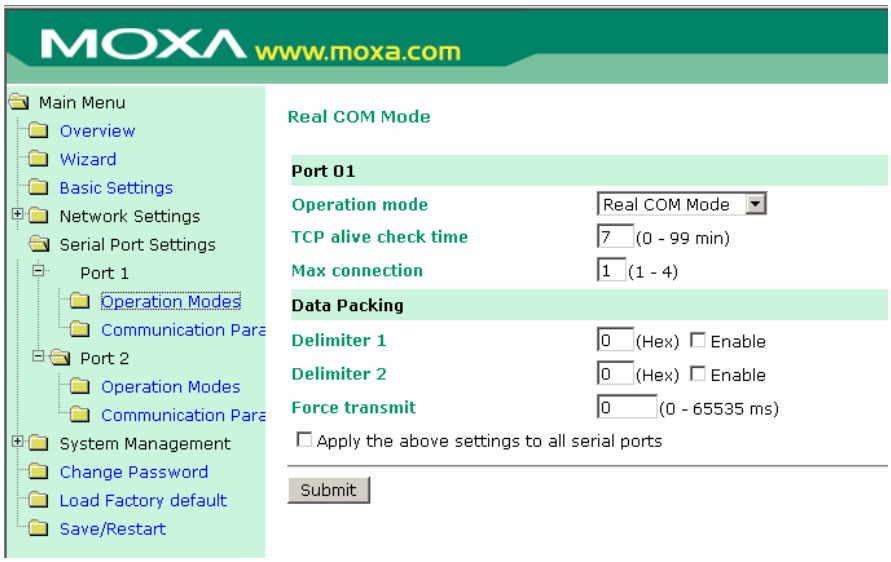
Serial Port Settings

Serial port settings are configured by port. For NPort W2250, you will need to configure both Port 1 and Port 2. For NPort W2150, you will just need to configure Port 1.

Operation Modes

The Serial Port parameters that appear in the right pane of the browser window when **Serial Port Settings → Port 1/2 → Operation Modes** is selected are dependent on which of the four operation modes is selected. We consider each operation mode in turn.

Real COM Mode



Port 01(02)

TCP alive check time

Setting	Factory Default	Necessity
0 to 99 min	7 min	Optional

0 min: TCP connection is not closed due to an idle TCP connection.
1 to 99 min: NPort W2250/2150 automatically closes the TCP connection if there is no TCP activity for the given time. After the connection is closed, NPort W2250/2150 starts listening for another Real COM driver connection request.

Max connection

Setting	Factory Default	Necessity
1, 2, 3, 4	1	Required

Max connection is usually used when the user needs to receive data from different hosts simultaneously. The factory default is 1. In this case, only one specific host can access this port of the NPort W2250/2150, and the Real COM driver on that host will have full control over the port.

Max connection 1
Allows only 1 host's Real COM driver to open the specific NPort W2250/2150 serial port.

Max connection 2 to 4:
Allows 2 to 4 host's Real COM drivers to open the specific NPort W2250/2150 serial port, at the same time. When multiple hosts' Real COM drivers open the serial port at the same time, the COM driver only provides a pure data tunneling without control ability.

Application software that is based on the COM driver will receive a driver response of "success" when the software uses any of the Win32 API functions. The firmware will only send the data back to the driver on the host.

Data will be sent first-in-first-out when data comes into the NPort W2250/2150 from the Ethernet interface.

ATTENTION

When **Max connection** is set to 2, 3, or 4, NPort W2250/2150 will use a "multi connection application" (i.e., 2, 3, or 4 hosts are allowed access to the port at the same time). When using a multi connection application, NPort W2250/2150 will use the serial communication parameters set in the console. All of the hosts connected to that port must use the same serial settings. If one of the hosts opens the COM port with parameters that are different from NPort W2250/2150's console setting, data communication may not work properly.

Data Packing

Delimiter 1/2

Setting	Factory Default	Necessity
00 to FF (hex)	None	Optional

Once the NPort W2250/2150 receives both delimiters through its serial port, it immediately packs all data currently in its buffer and sends it to the NPort W2250/2150's Ethernet port.

ATTENTION

Delimiter 2 is optional. If left blank, then Delimiter 1 alone trips clearing of the buffer. If the size of the serial data received is greater than 1 KB, the NPort W2250/2150 will automatically pack the data and send it to the Ethernet. However, to use the delimiter function, you must at least enable Delimiter 1. If Delimiter 1 is left blank and Delimiter 2 is enabled, the delimiter function will not work properly.

Force transmit

Setting	Factory Default	Necessity
0 to 65535 ms	0	Optional

0: Disable force transmit timeout.

1 to 65535: Forces the NPort W2250/2150's TCP/IP protocol software to try to pack serial data received during the specified time into the same data frame.

This parameter defines the time interval during which NPort W2250/2150 fetches the serial data from its internal buffer. If data is incoming through the serial port, NPort W2250/2150 stores the data in the internal buffer. NPort W2250/2150 transmits data stored in the buffer via TCP/IP, but only if the internal buffer is full or if the Force transmit time interval reaches the time specified under Force transmit timeout.

The optimal Force transmit timeout depends on your application, but it must be at least larger than one character interval within the specified baud rate. For example, assume that the serial port is set to 1200 bps, 8 data bits, 1 stop bit, and no parity. In this case, the total number of bits needed to send a character is 10 bits, and the time required to transfer one character is

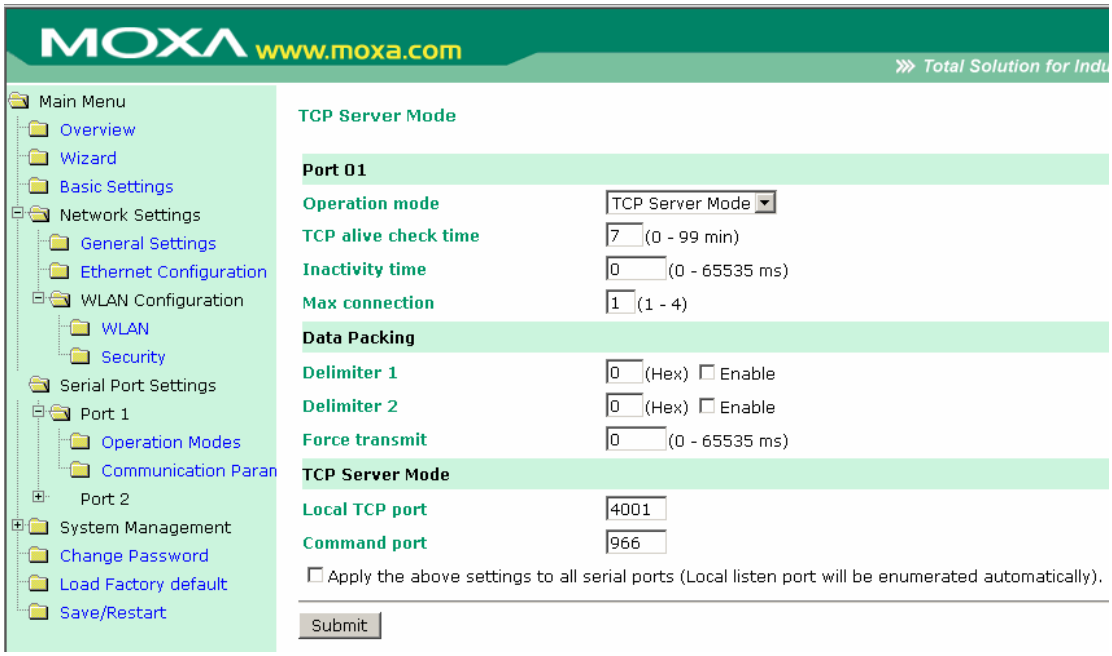
(10 (bits) / 1200 (bits/s)) * 1000 (ms/s) = 8.3 ms.

Therefore, you should set Force transmit to be larger than 8.3 ms, so in this case, it must be greater

than or equal to 10 ms.

If you want to send a series of characters in the same packet, the serial device attached to NPort W2250/2150 should send that series of characters during a time interval less than the Force transmit timeout, and the total length of data must be less than or equal to NPort W2250/2150's internal buffer size. The serial communication buffer size for NPort W2250/2150 is 1 KB per port.

TCP Server Mode



Port 01(02)

TCP alive check time

Setting	Factory Default	Necessity
0 to 99 min	7 min	Optional

0 min: TCP connection is not closed due to an idle TCP connection.

1 to 99 min: NPort W2250/2150 automatically closes the TCP connection if there is no TCP activity for the given time. After the connection is closed, NPort W2250/2150 starts listening for another host's TCP connection.

Inactivity time

Setting	Factory Default	Necessity
0 to 65535 ms	0 ms	Optional

0 ms: TCP connection is not closed due to an idle serial line.

0-65535 ms: NPort W2250/2150 automatically closes the TCP connection if there is no serial data activity for the given time. After the connection is closed, NPort W2250/2150 starts listening for another host's TCP connection.

This parameter defines the maintenance status as Closed or Listen for the TCP connection. The connection is closed if there is no incoming or outgoing data through the serial port during the specific Inactivity time.

If the Inactivity time is set to 0, the current TCP connection is kept active until a connection close request is received. Although Inactivity time is disabled, the NPort W2250/2150 will check the connection status between the NPort W2250/2150 and remote host by sending "keep alive" packets periodically. If the remote host does not respond to the packet, NPort W2250/2150 assumes that the connection was closed down unintentionally. NPort W2250/2150 will then force the existing TCP connection to close.

ATTENTION

The Inactivity time should be set at least larger than that of Force transmit timeout. To prevent the unintended loss of data due to the session being disconnected, it is highly recommended that this value is set large enough so that the intended data transfer can be completed.

Max connection

Setting	Factory Default	Necessity
1, 2, 3, 4	1	Required

Max connection is usually used when the user needs to receive data from different hosts simultaneously. The factory default is 1. In this case, only one specific host can access this port of the NPort W2250/2150.

Max connection 1
Allows only 1 host to open the specific NPort W2250/2150 serial port.

Max connection 2 to 4:
Allows 2 to 4 hosts to open the specific NPort W2250/2150 serial port, at the same time. When multiple hosts open the serial port at the same time, the COM driver only provides a pure data tunneling without control ability.

Data will be sent first-in-first-out when data comes into the NPort W2250/2150 from the Ethernet interface.

ATTENTION

When **Max connection** is set to 2, 3, or 4, NPort W2250/2150 will use a "multi connection application" (i.e., 2, 3, or 4 hosts are allowed access to the port at the same time). When using a multi connection application, NPort W2250/2150 will use the serial communication parameters set in the console. All of the hosts connected to that port must use the same serial settings. If one of the hosts opens the COM port with parameters that are different from NPort W2250/2150's console setting, data communication may not work properly.

Data Packing

Delimiter 1/2

Setting	Factory Default	Necessity
00 to FF (hex)	None	Optional

Once the NPort W2250/2150 receives both delimiters through its serial port, it immediately packs all data currently in its buffer and sends it to the NPort W2250/2150's Ethernet port.

ATTENTION

Delimiter 2 is optional. If left blank, then Delimiter 1 alone trips clearing of the buffer. If the size of the serial data received is greater than 1 KB, the NPort W2250/2150 will automatically pack the data and send it to the Ethernet. However, to use the delimiter function, you must at least enable Delimiter 1. If Delimiter 1 is left blank and Delimiter 2 is enabled, the delimiter function will not work properly.

Force transmit

Setting	Factory Default	Necessity
0 to 65535 ms	0	Optional

0: Disable force transmit timeout.

1 to 65535: Forces the NPort W2250/2150's TCP/IP protocol software to try to pack serial data received during the specified time into the same data frame.

This parameter defines the time interval during which NPort W2250/2150 fetches the serial data from its internal buffer. If data is incoming through the serial port, NPort W2250/2150 stores the data in the internal buffer. NPort W2250/2150 transmits data stored in the buffer via TCP/IP, but only if the internal buffer is full or if the Force transmit time interval reaches the time specified under Force transmit timeout.

The optimal Force transmit timeout depends on your application, but it must be at least larger than one character interval within the specified baud rate. For example, assume that the serial port is set to 1200 bps, 8 data bits, 1 stop bit, and no parity. In this case, the total number of bits needed to send a character is 10 bits, and the time required to transfer one character is

(10 (bits) / 1200 (bits/s)) * 1000 (ms/s) = 8.3 ms.

Therefore, you should set Force transmit to be larger than 8.3 ms, so in this case, it must be greater than or equal to 10 ms.

If you want to send a series of characters in the same packet, the serial device attached to NPort W2250/2150 should send that series of characters during a time interval less than the Force transmit timeout, and the total length of data must be less than or equal to NPort W2250/2150's internal buffer size. The serial communication buffer size for NPort W2250/2150 is 1 KB per port.

TCP Server Mode

Local TCP Port

Setting	Factory Default	Necessity
1 to 65535	4001	Required

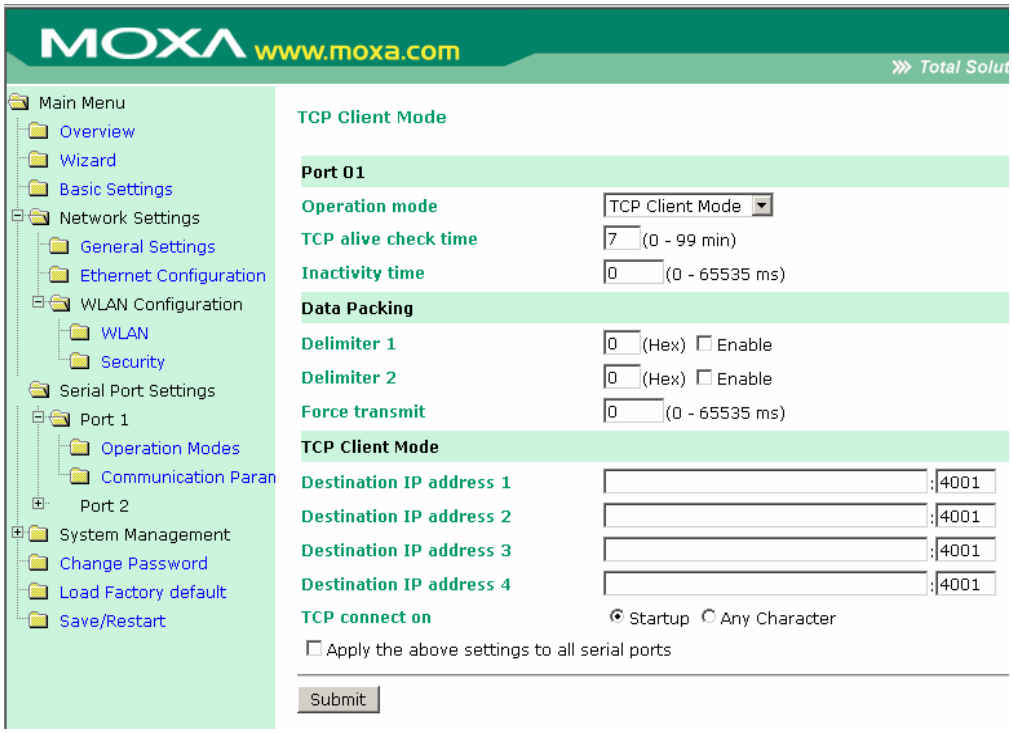
The "Local TCP port" is the TCP port that NPort W2250/2150 uses to listen to connections, and that other devices must use to contact NPort W2250/2150. To avoid conflicts with well known TCP ports, the default is set to 4001.

Command port

Setting	Factory Default	Necessity
1 to 65535	966	Optional

The "Command port" is a listen TCP port for IP-Serial Lib commands from the host. In order to prevent a TCP port conflict with other applications, the user can set the Command port to another port if needed. IP-Serial Lib will automatically check the Command Port on NPort W2250/2150 so that the user does not need to configure the program.

TCP Client Mode



Port 01(02)

TCP alive check time

Setting	Factory Default	Necessity
0 to 99 min	7 min	Optional

0 min: TCP connection is not closed due to an idle TCP connection.

1 to 99 min: NPort W2250/2150 automatically closes the TCP connection if there is no TCP activity for the given time. After the connection is closed, NPort W2250/2150 starts listening for another host's TCP connection.

Inactivity time

Setting	Factory Default	Necessity
0 to 65535 ms	0 ms	Optional

0 ms: TCP connection is not closed due to an idle serial line.

0-65535 ms: NPort W2250/2150 automatically closes the TCP connection if there is no serial data activity for the given time. After the connection is closed, NPort W2250/2150 starts listening for another host's TCP connection.

This parameter defines the maintenance status as Closed or Listen for the TCP connection. The connection is closed if there is no incoming or outgoing data through the serial port during the specific Inactivity time.

If the Inactivity time is set to 0, the current TCP connection is kept active until a connection close request is received. Although Inactivity time is disabled, the NPort W2250/2150 will check the connection status between the NPort W2250/2150 and remote host by sending "keep alive" packets periodically. If the remote host does not respond to the packet, NPort W2250/2150 assumes that the connection was closed down unintentionally. NPort W2250/2150 will then force the existing TCP connection to close.

ATTENTION

The Inactivity time should be set at least larger than that of Force transmit timeout. To prevent the unintended loss of data due to the session being disconnected, it is highly recommended that this value is set large enough so that the intended data transfer can be completed.

ATTENTION

Inactivity time is ONLY active when "TCP connect on" is set to "Any character."

Data Packing

Delimiter 1/2

Setting	Factory Default	Necessity
00 to FF (hex)	None	Optional

Once the NPort W2250/2150 receives both delimiters through its serial port, it immediately packs all data currently in its buffer and sends it to the NPort W2250/2150's Ethernet port.

ATTENTION

Delimiter 2 is optional. If left blank, then Delimiter 1 alone trips clearing of the buffer. If the size of the serial data received is greater than 1 KB, the NPort W2250/2150 will automatically pack the data and send it to the Ethernet. However, to use the delimiter function, you must at least enable Delimiter 1. If Delimiter 1 is left blank and Delimiter 2 is enabled, the delimiter function will not work properly.

Force transmit

Setting	Factory Default	Necessity
0 to 65535 ms	0	Optional

0: Disable force transmit timeout.

1 to 65535: Forces the NPort W2250/2150's TCP/IP protocol software to try to pack serial data received during the specified time into the same data frame.

This parameter defines the time interval during which NPort W2250/2150 fetches the serial data from its internal buffer. If data is incoming through the serial port, NPort W2250/2150 stores the data in the internal buffer. NPort W2250/2150 transmits data stored in the buffer via TCP/IP, but only if the internal buffer is full or if the Force transmit time interval reaches the time specified under Force transmit timeout.

The optimal Force transmit timeout depends on your application, but it must be at least larger than one character interval within the specified baud rate. For example, assume that the serial port is set to 1200 bps, 8 data bits, 1 stop bit, and no parity. In this case, the total number of bits needed to send a character is 10 bits, and the time required to transfer one character is

(10 (bits) / 1200 (bits/s)) * 1000 (ms/s) = 8.3 ms.

Therefore, you should set Force transmit to be larger than 8.3 ms, so in this case, it must be greater than or equal to 10 ms.

If you want to send a series of characters in the same packet, the serial device attached to NPort W2250/2150 should send that series of characters during a time interval less than the Force transmit timeout, and the total length of data must be less than or equal to NPort W2250/2150's internal buffer size. The serial communication buffer size for NPort W2250/2150 is 1 KB per port.

TCP Client Mode

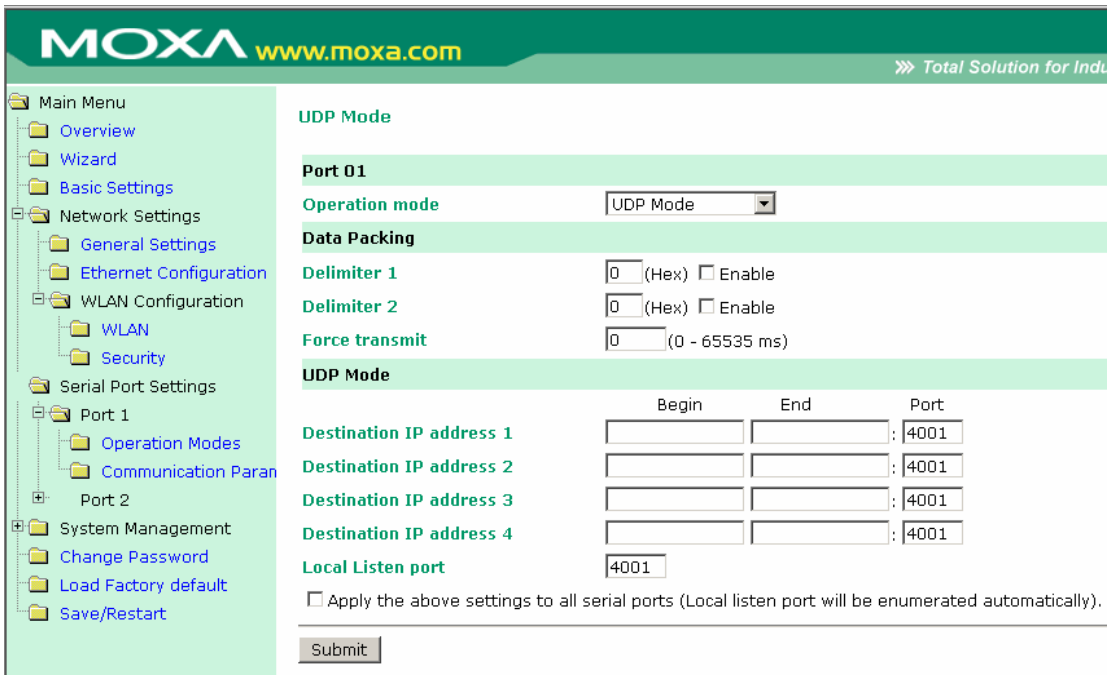
Destination IP address 1/2/3/4

Setting	Factory Default	Necessity
IP address or Domain Name	None	Required

ATTENTION

Inactivity time is ONLY active when "TCP connect on" is set to "Any character."

UDP Mode



Data Packing

Delimiter 1/2

Setting	Factory Default	Necessity
00 to FF (hex)	None	Optional

Once the NPort W2250/2150 receives both delimiters through its serial port, it immediately packs all data currently in its buffer and sends it to the NPort W2250/2150's Ethernet port.

ATTENTION

Delimiter 2 is optional. If left blank, then Delimiter 1 alone trips clearing of the buffer. If the size of the serial data received is greater than 1 KB, the NPort W2250/2150 will automatically pack the data and send it to the Ethernet. However, to use the delimiter function, you must at least enable Delimiter 1. If Delimiter 1 is left blank and Delimiter 2 is enabled, the delimiter function will not work properly.

Force transmit

Setting	Factory Default	Necessity
0 to 65535 ms	0	Optional

0: Disable force transmit timeout.

1 to 65535: Forces the NPort W2250/2150's TCP/IP protocol software to try to pack serial data received during the specified time into the same data frame.

This parameter defines the time interval during which NPort W2250/2150 fetches the serial data from its internal buffer. If data is incoming through the serial port, NPort W2250/2150 stores the data in the internal buffer. NPort W2250/2150 transmits data stored in the buffer via TCP/IP, but only if the internal buffer is full or if the Force transmit time interval reaches the time specified under Force transmit timeout.

The optimal Force transmit timeout depends on your application, but it must be at least larger than one character interval within the specified baud rate. For example, assume that the serial port is set to 1200 bps, 8 data bits, 1 stop bit, and no parity. In this case, the total number of bits needed to send a character is 10 bits, and the time required to transfer one character is

(10 (bits) / 1200 (bits/s)) * 1000 (ms/s) = 8.3 ms.

Therefore, you should set Force transmit to be larger than 8.3 ms, so in this case, it must be greater than or equal to 10 ms.

If you want to send a series of characters in the same packet, the serial device attached to NPort W2250/2150 should send that series of characters during a time interval less than the Force transmit timeout, and the total length of data must be less than or equal to NPort W2250/2150's internal buffer size. The serial communication buffer size for NPort W2250/2150 is 1 KB per port.

UDP Mode

Destination IP address 1

Setting	Factory Default	Necessity
IP address range E.g. Begin: 192.168.1.1 End: 192.168.1.10	Begin: Empty End: Empty Port: 4001	Required

Destination IP address 2/3/4

Setting	Factory Default	Necessity
IP address range E.g. Begin: 192.168.1.11 End: 192.168.1.20	Begin: Empty	Optional

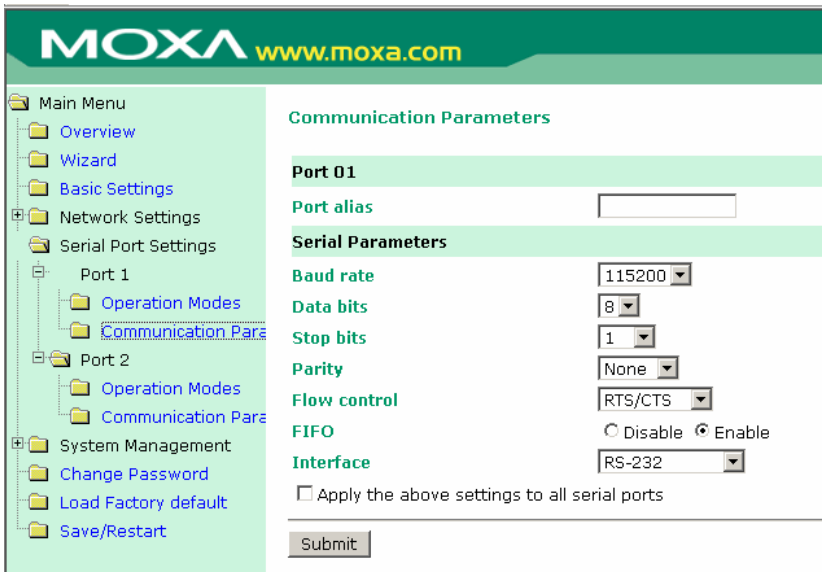
Allows NPort W2250/2150 to connect actively to the remote host whose IP address is set by this parameter.

Local Listen port

Setting	Factory Default	Necessity
1 to 65535	4001	Required

The UDP port that NPort listens to, and that other devices must use to contact NPort. To avoid conflicts with well known UDP ports, the default is set to 4001.

Communication Parameters



Port 01(02)

Port alias

Setting	Factory Default	Necessity
1 to 15 characters (e.g., PLC-No. 1)	None	Optional

"Port alias" is included to allow easy identification of the serial devices that are connected to NPort W2250/2150's serial port.

Serial Parameters

ATTENTION

Check the serial communication parameters in your Serial Device's user's manual. You should set up NPort W2250/2150's serial parameters with the same communication parameters used by your serial devices.

Baud Rate

Setting	Factory Default	Necessity
110 bps to 230.4 Kbps	115.2 Kbps	Required

Data Bits

Setting	Factory Default	Necessity
5, 6, 7, 8	8	Required

Stop Bits

Setting	Factory Default	Necessity
1, 2	1	Required

Parity

Setting	Factory Default	Necessity
None, Odd, Even, Space, Mark	None	Required

Flow Control

Setting	Factory Default	Necessity
None, RTS/CTS, DTR/DSR, XON/XOFF	RTS/CTS	Required

FIFO

Setting	Factory Default	Necessity
Enable, Disable	Enable	Required

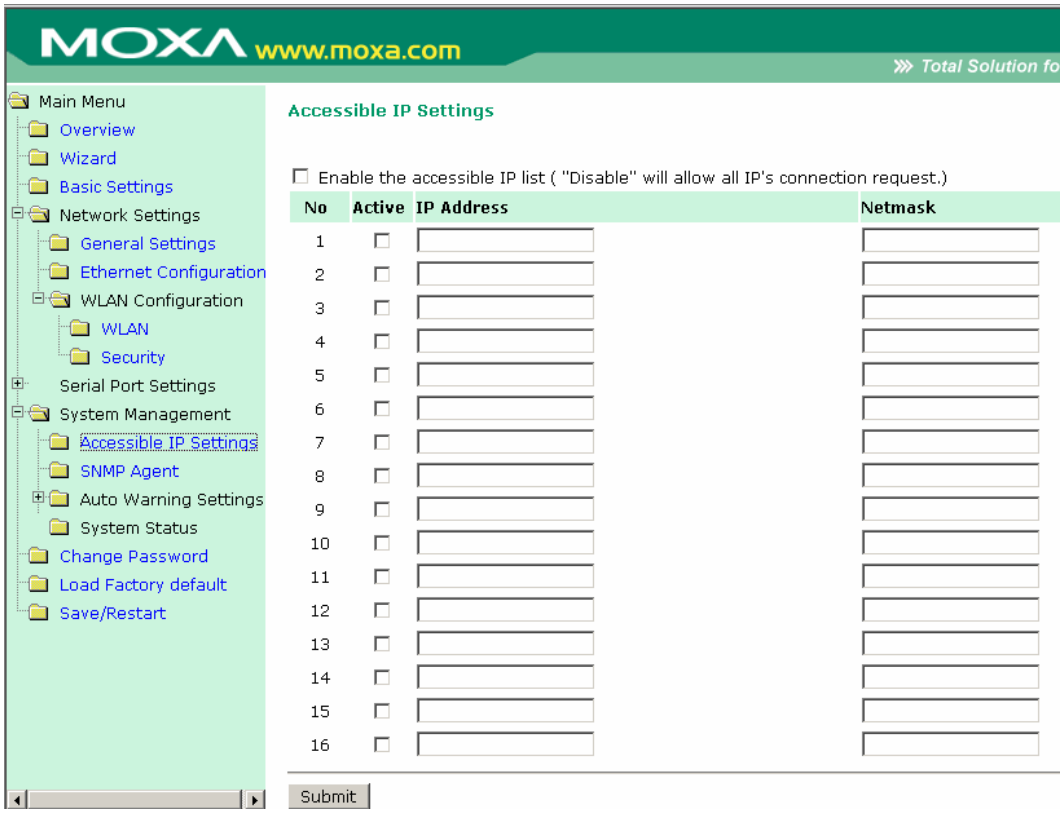
NPort W2250/2150's serial ports provide a 16-byte FIFO both in the Tx and Rx directions. To prevent data loss during communication, disable the FIFO setting when your serial device does not have a FIFO.

Interface

Model	Ports	Settings	Factory Default	Necessity
NPort W2250	2	RS-232/422/485	RS-232	Required
NPort W2150	1	RS-232/422/485	RS-232	Required

System Management

Accessible IP Settings



NPort W2250/2150 uses an IP address based filtering method to control access to itself.

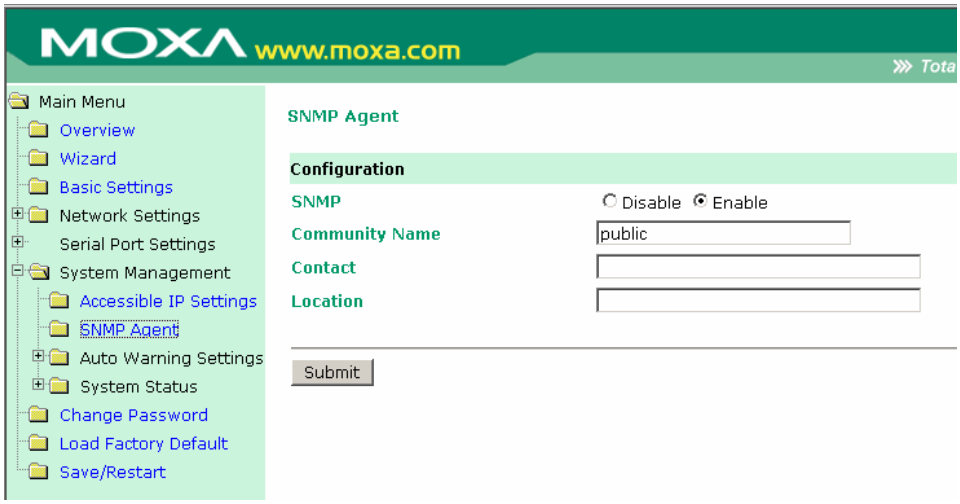
Accessible IP Settings allows you to add or block remote host IP addresses to prevent unauthorized access. Access to NPort W2250/2150 is controlled by IP address. That is, if a host's IP address is in the accessible IP table, then the host will be allowed to access the NPort W2250/2150. You can set up one of the following cases by setting the parameters accordingly.

- **Only one host with a specific IP Address can access the NPort W2250/2150**
  Enter the specific IP address (e.g., 192.168.1.1), and enter 255.255.255.255 for Netmask.
- **Hosts on the specific subnet can access the NPort W2250/2150**
  Enter an IP address (e.g., 192.168.1.0), and enter the Netmask (e.g., 255.255.255.0). Note that this type of setting will allow access to all network hosts on a particular subnet.
- **Any host can access the NPort W2250/2150**
  Disable this function by un-checking the "Enable the accessible IP list" checkbox. Refer to the following table for more configration examples.

The following "Allowable Hosts" table gives five configuration examples.

Allowable Hosts	IP Address	Netmask
Any host	*blank*	*blank*
192.168.1.120	192.168.1.120	255.255.255.255
192.168.1.1 to 192.168.1.254	192.168.1.0	255.255.255.0
192.168.0.1 to 192.168.255.254	192.168.0.0	255.255.0.0
192.168.1.1 to 192.168.1.126	192.168.1.0	255.255.255.128
192.168.1.129 to 192.168.1.254	192.168.1.128	255.255.255.128

SNMP Agent



To enable the SNMP Agent function, select the enable option, and enter a Community Name (e.g., "public").

Community name

Setting	Factory Default	Necessity
1 to 39 characters (e.g., Support, 886-89191230 #300)	public	Optional

A community name is a plain-text password mechanism that is used to authenticate weakly queries to agents of managed network devices.

Contact

Setting	Factory Default	Necessity
1 to 39 characters (e.g., Support, 886-89191230 #300)	None	Optional

The SNMP contact information usually includes an emergency contact name and telephone or pager number.

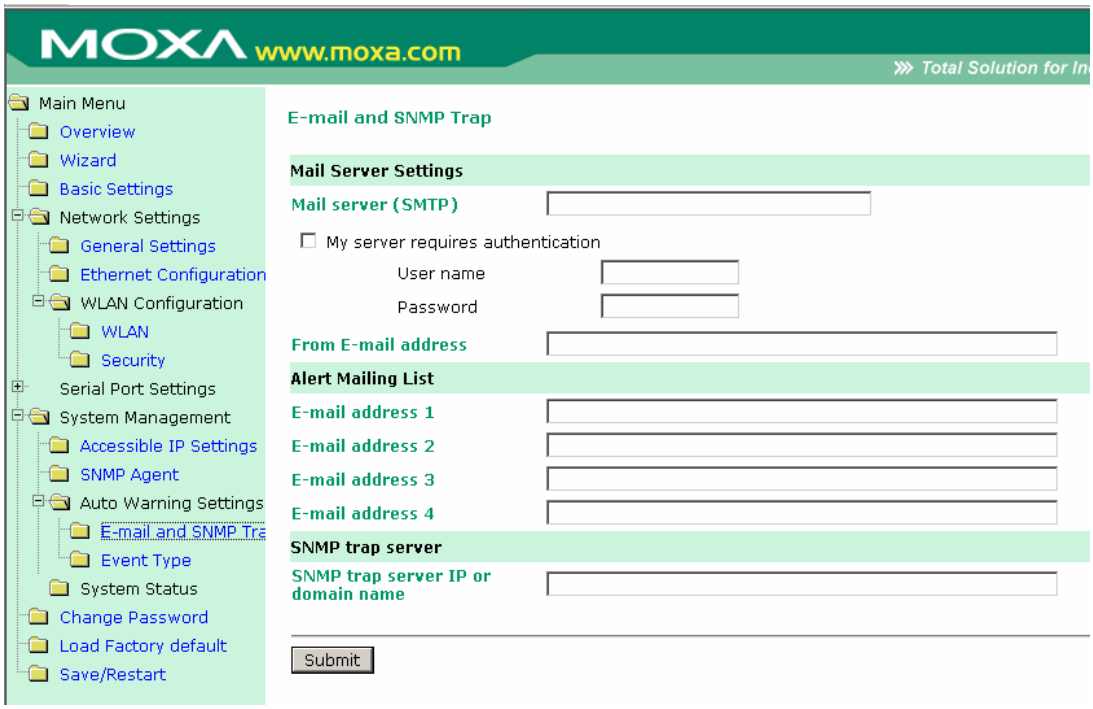
Location

Setting	Factory Default	Necessity
1 to 39 characters (e.g., Floor 1, Office No. 2)	None	Optional

Specify the location string for SNMP agents such as NPort W2250/2150. This string is usually set to the street address where the NPort W2250/2150 is physically located.

Auto Warning Settings

E-mail and SNMP Trap



Mail Server Settings

Mail server (SMTP)

Setting	Factory Default	Necessity
IP Address or Domain Name	None	Optional

User name

Setting	Factory Default	Necessity
1 to 15 characters	None	Optional

Password

Setting	Factory Default	Necessity
1 to 15 characters	None	Optional

From E-mail address

Setting	Factory Default	Necessity
1 to 63 characters	None	Optional

Alert Mailing List

E-mail address 1/2/3/4

Setting	Factory Default	Necessity
1 to 63 characters	None	Optional

ATTENTION

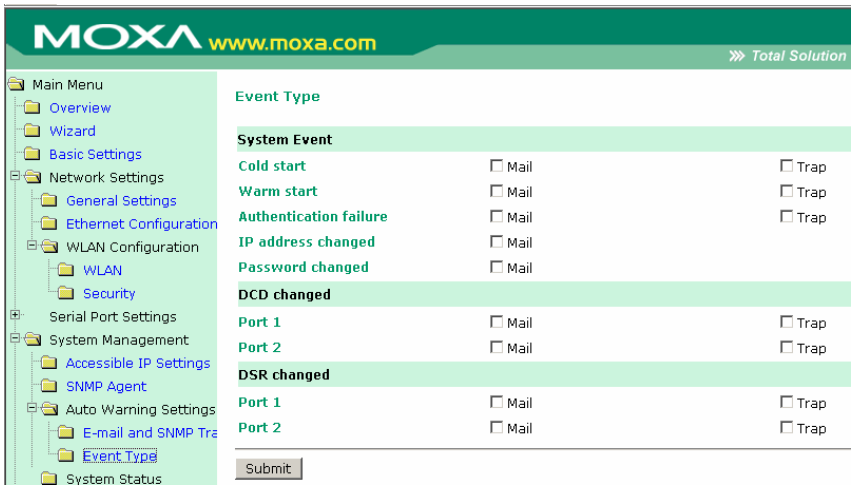
Consult your Network Administrator or ISP for the proper mail server settings. The Auto warning function may not work properly if it is not configured correctly. NPort W2250/W2150 SMTP AUTH supports LOGIN, PLAIN, CRAM-MD5 (RFC 2554).

SNMP Trap Server

SNMP trap server IP or domain name

Setting	Factory Default	Necessity
IP address or Domain Name	None	Optional

Event Type



System Event

Cold start
This refers to starting the system from power off (contrast this with warm start). When performing a cold start, NPort W2250/W2150 will automatically issue an Auto warning message by e-mail, or send an SNMP trap after booting up.

Warm start
This refers to restarting the computer without turning the power off. When performing a warm start, NPort W2250/W2150 will automatically send an e-mail, or send an SNMP trap after rebooting.

Authentication Failure
The user inputs a wrong password from the Console or Administrator. When authentication failure occurs, NPort W2250/W2150 will immediately send an e-mail or send an SNMP trap.

IP address changed
The user has changed NPort W2250/W2150's IP address. When the IP address changes, NPort W2250/W2150 will send an e-mail with the new IP address before NPort W2250/W2150 reboots. If the NPort W2250/W2150 is unable to send an e-mail message to the mail server within 15 seconds, NPort W2250/W2150 will reboot anyway, and abort the e-mail auto warning.

Password changed
The user has changed NPort W2250/W2150's password. When the password changes, NPort W2250/W2150 will send an e-mail with the password changed notice before NPort W2250/W2150 reboots. If the NPort W2250/W2150 is unable to send an e-mail message to the mail server within 15 seconds, NPort W2250/W2150 will reboot anyway, and abort the e-mail auto warning.

DCD Changed

The DCD (Data Carrier Detect) signal has changed, also indicating that the modem connection status has changed. For example, a DCD change to high also means "Connected" between local modem and remote modem. If the DCD signal changes to low, it also means that the connection line is down.

When the DCD changes, NPort W2250/2150 will immediately send an e-mail or send an SNMP trap.

DSR Changed

The DSR (Data Set Ready) signal has changed, also indicating that the data communication equipment's power is off. For example, a DSR change to high also means that the DCE is powered ON. If the DSR signal changes to low, it also means that the DCE is powered off.

When the DSR changes, NPort W2250/2150 will immediately send an e-mail or send an SNMP trap.

Mail

Setting	Factory Default	Necessity
Enable, Disable	Disable	Optional

This feature helps the administrator manage how the NPort W2250/W2150 sends e-mail to pre-defined e-mail boxes when the enabled events—such as Cold start, Warm start, Authentication failure, etc.—occur. To configure this feature, click on the Event Type Mail checkbox.

Trap

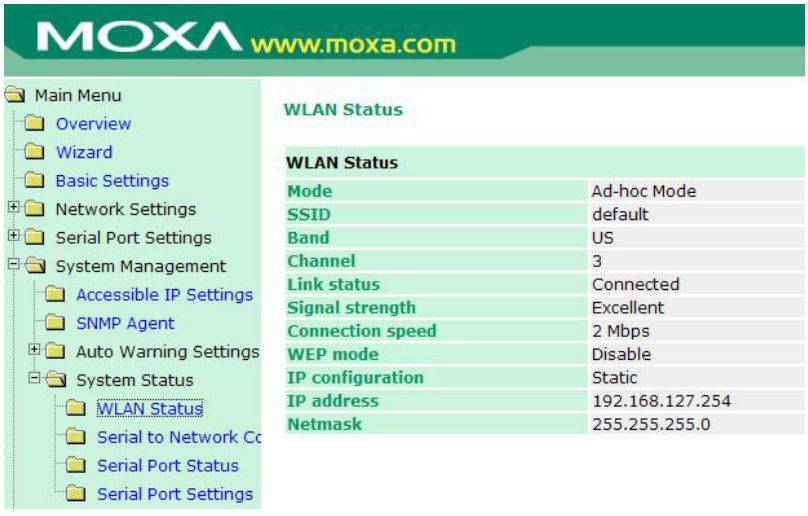
Setting	Factory Default	Necessity
Enable, Disable	Disable	Optional

This feature helps the administrator manage how the NPort W2250/W2150 sends SNMP Trap to a pre-defined SNMP Trap server when the enabled events—such as Cold start, Warm start, Authentication failure, etc.—occur. To configure this feature, click on the Event Type Trap checkbox.

System Status

WLAN Status

The **WLAN Status** page lists **Mode**, **SSID**, **Band**, **Channel**, **Link status**, **Signal strength**, **Connection speed**, **WEP mode**, **IP configuration**, **IP address**, and **Netmask**, as shown in the following figure.



Serial to Network Connections

The **Serial to Network Connections** page lists the operation modes and IP addresses associated with each of the wireless device server's serial ports.

Serial to Network Connections

Port	OP Mode	IP 1	IP 2	IP 3	IP 4
1	Real COM Mode				
2	Real COM Mode				

Serial Port Status

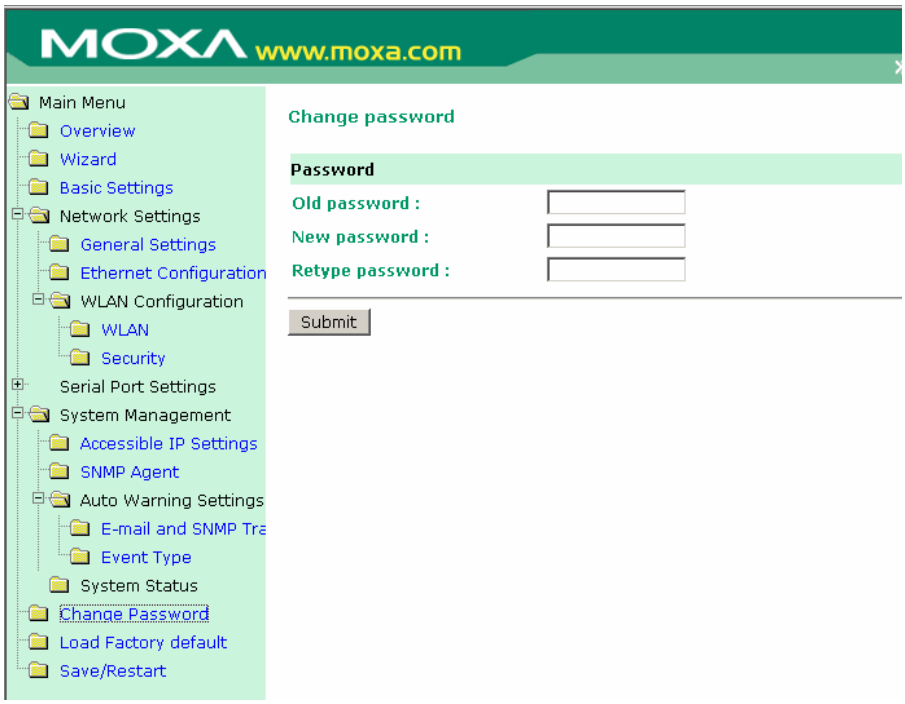
The **Serial Port Status** page lists serial transmission stats for each of the wireless device server's serial ports.

Serial Port Status

Port	TxCnt	RxCnt	TxTotalCnt	RxTotalCnt	DSR	CTS	DCD
1	0	0	0	0	OFF	OFF	OFF
2	0	0	0	0	OFF	OFF	OFF

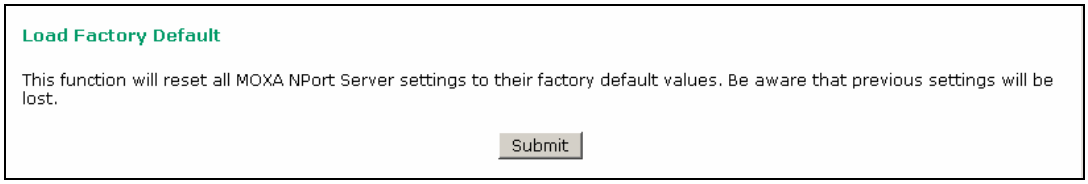
Change Password

To change the password for the NPort W2250/2150, input the **Old password**, **New password**, and then retype the new password in the **Retype password**" input box. To erase the password, simply leave all three text input boxes blank, and then click on **Submit**.



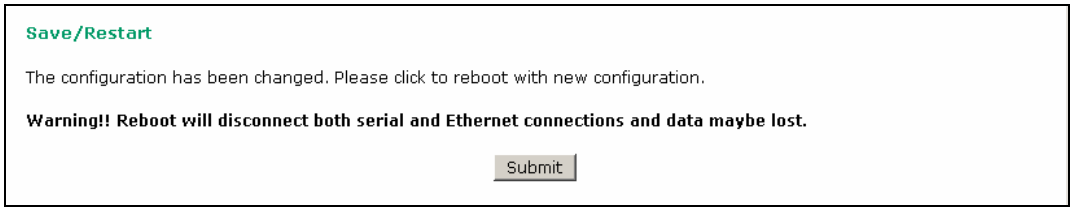
Load Factory Default

Click on **Submit** in the **Load Factory Default** page to reload the NPort W2250/W2150's factory default values. Keep in mind that all current settings will be lost.


Load Factory Default
This function will reset all MOXA NPort Server settings to their factory default values. Be aware that previous settings will be lost.
Submit

Save/Restart

After making modifications to the NPort W2250/2150's configuration, click on **Submit** in the **Save/Restart** page to save the settings, and reboot the NPort W2250/2150.


Save/Restart
The configuration has been changed. Please click to reboot with new configuration.
Warning!! Reboot will disconnect both serial and Ethernet connections and data maybe lost.
Submit

ATTENTION

If you forget the password, the ONLY way to configure NPort W2250/2150 is by using the **Reset** button on NPort W2250/2150's casing to "Load Factory Default."

6

Installing and Configuring the Software

This following topics are covered in this chapter:

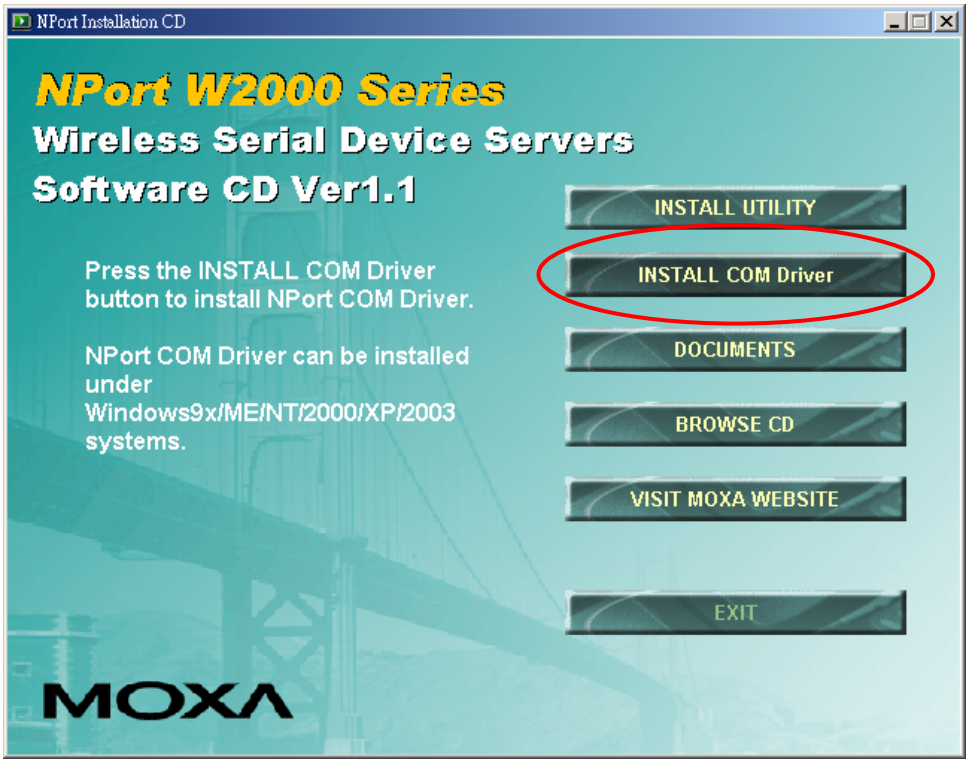
- **Overview**
- **Installing NPort COM Driver**
- **Intalling NPort Search Utility**
- **Configuring NPort COM Driver**
- **Configuring NPort Search Utility**
- **Real TTY and Fixed TTY Installation**
- **Upgrading the Firmware**

Overview

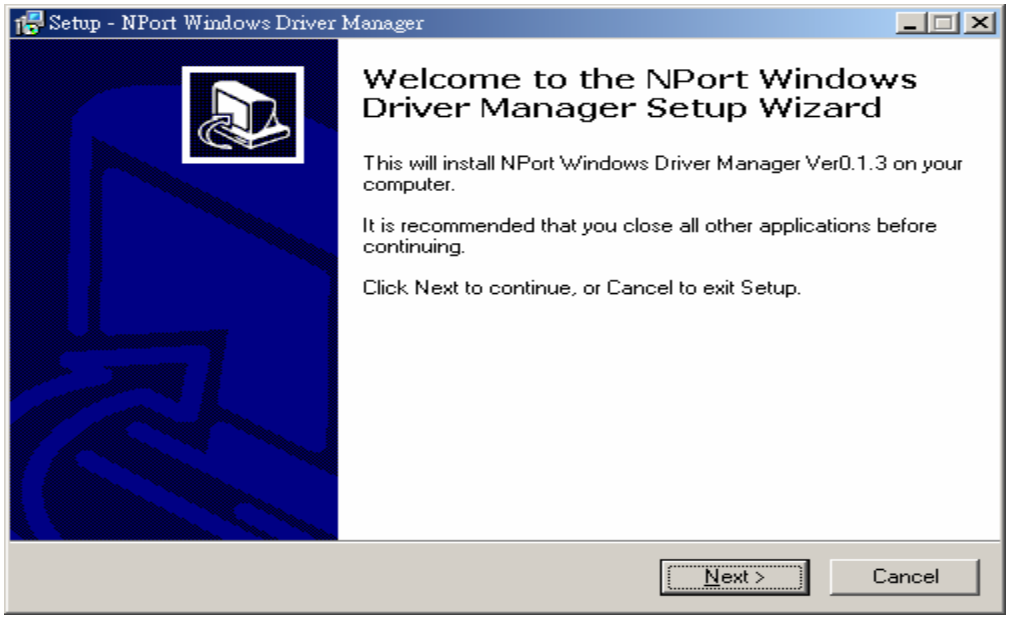
The Documentation & Software CD included with your NPort W2250/2150 is designed to make the installation and configuration procedure easy and straightforward. This auto-run CD includes the NPort COM Driver (for COM mapping), NPort Search Utility (to broadcast search for all NPort W2250/2150 accessible over the network), User's Manual, and firmware upgrade utility.

Installing NPort COM Driver

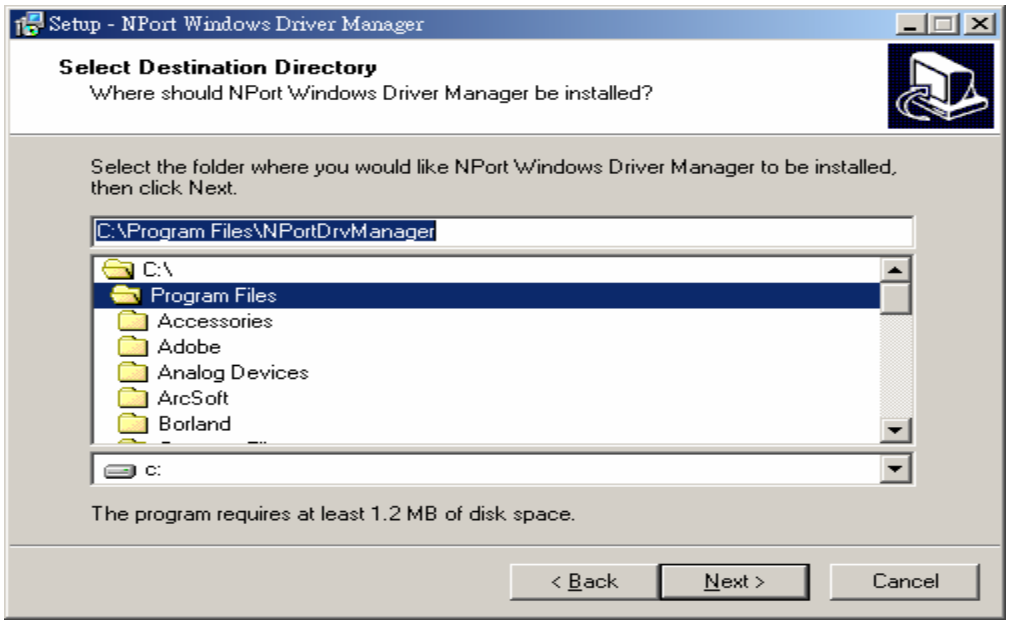
1. Click on the **INSTALL COM Driver** button in the NPort Installation CD auto-run window to install the NPort W2000 Series COM Driver.



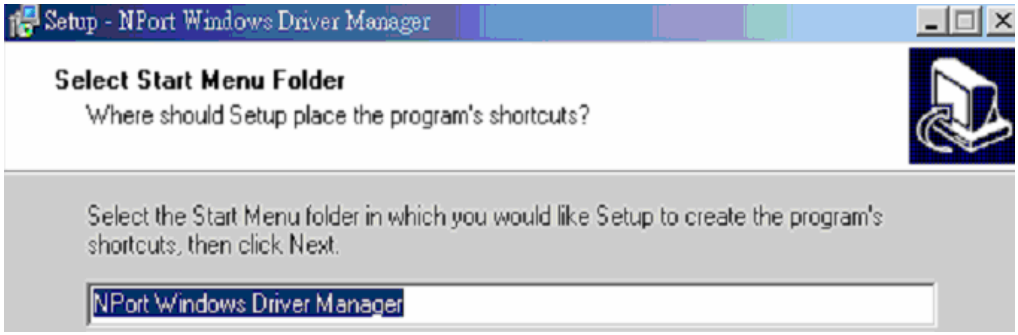
2. Once the installation program starts running, click on **Yes** to proceed.
3. Click on **Next** when the Welcome window opens to proceed with the installation.


Setup - NPort Windows Driver Manager
Welcome to the NPort Windows Driver Manager Setup Wizard
This will install NPort Windows Driver Manager Ver0.1.3 on your computer.
It is recommended that you close all other applications before continuing.
Click Next to continue, or Cancel to exit Setup.
Next >
Cancel

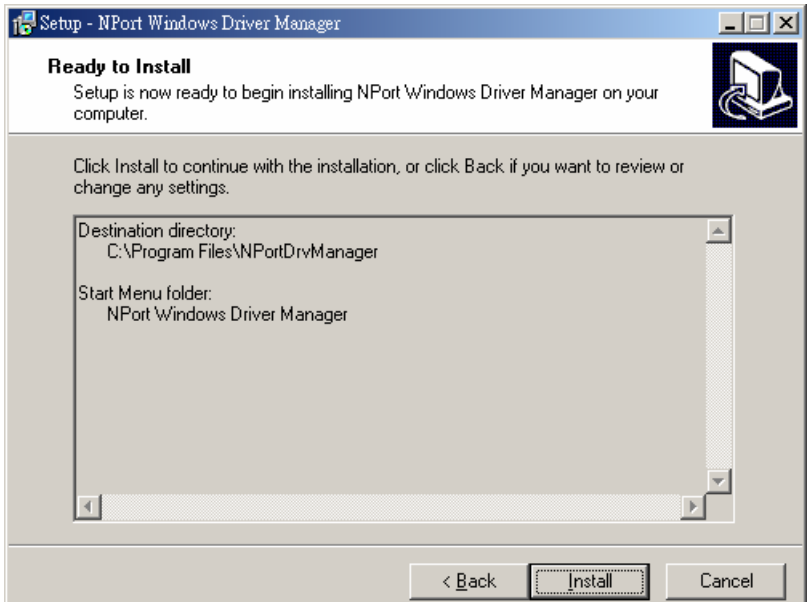
4. Click on **Next** to install program files in the default directory, or use the folder menu to select an alternative location.



5. Click on **Next** to install the program's shortcuts in the **NPort Windows Driver Manager** Start Menu folder.


Setup - NPort Windows Driver Manager
Select Start Menu Folder
Where should Setup place the program's shortcuts?
Select the Start Menu folder in which you would like Setup to create the program's shortcuts, then click Next.
NPort Windows Driver Manager

6. Click on **Install** to proceed with the installation.

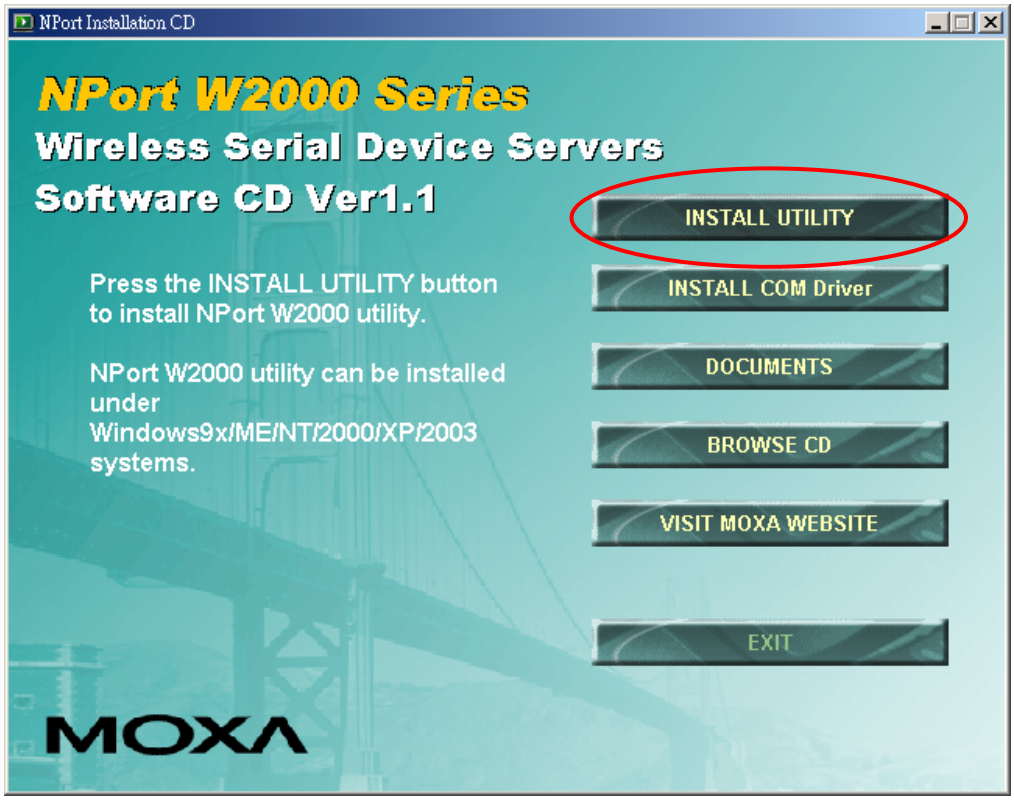

Setup - NPort Windows Driver Manager
Ready to Install
Setup is now ready to begin installing NPort Windows Driver Manager on your computer.
Click Install to continue with the installation, or click Back if you want to review or change any settings.
Destination directory:
C:\Program Files\NPortDrvManager
Start Menu folder:
NPort Windows Driver Manager
< Back
Install
Cancel

7. The Installing window will report the progress of the installation.
8. Click on **Finish** to complete the installation of the NPort W2250/W2150 COM Mapping Utility.

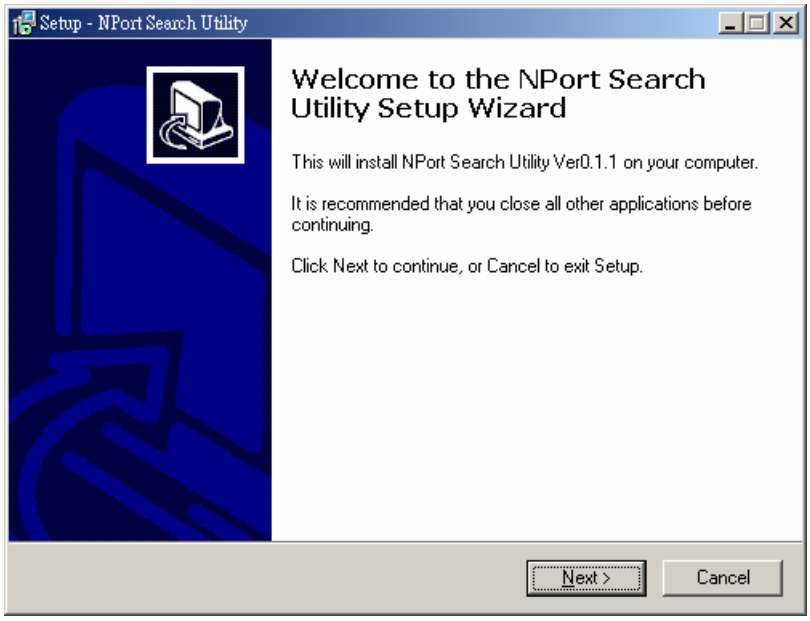
Setup - NPort Windows Driver Manager
Completing the NPort Windows Driver Manager Setup Wizard
Setup has finished installing NPort Windows Driver Manager on your computer. The application may be launched by selecting the installed icons.
Click Finish to exit Setup.
Launch NPort Windows Driver Manager
Finish

Installing NPort Search Utility

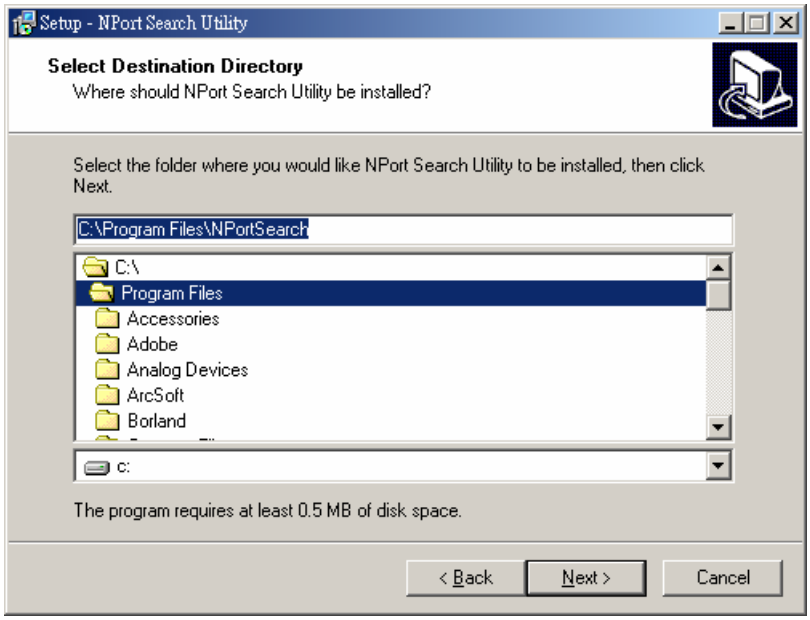
1. Click on the **INSTALL UTILITY** button in the NPort Installation CD auto-run window to install the NPort Search Utility.



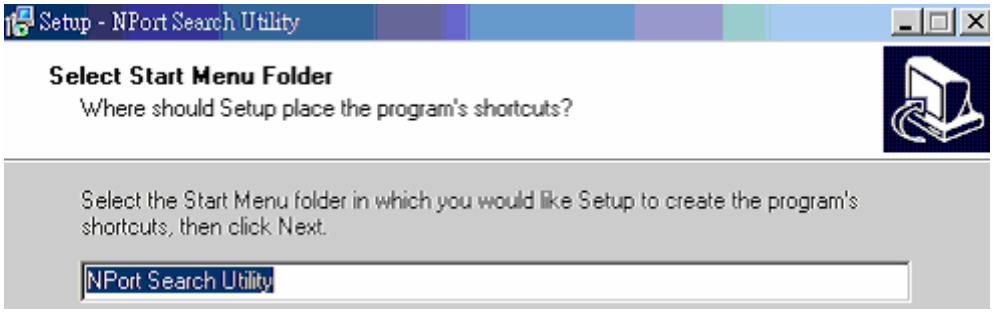
2. Once the program starts running, click on **Yes** to proceed.
3. Click on **Next** when the Welcome window opens to proceed with the installation.


Setup - NPort Search Utility
Welcome to the NPort Search Utility Setup Wizard
This will install NPort Search Utility Ver0.1.1 on your computer.
It is recommended that you close all other applications before continuing.
Click Next to continue, or Cancel to exit Setup.
Next >
Cancel

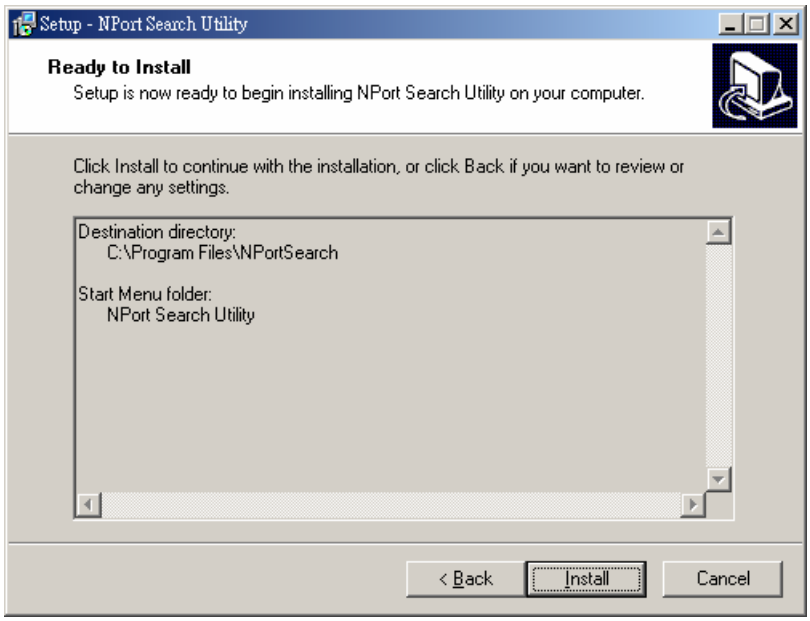
4. Click on **Next** to install program files in the default directory, or use the folder menu to select an alternative location.



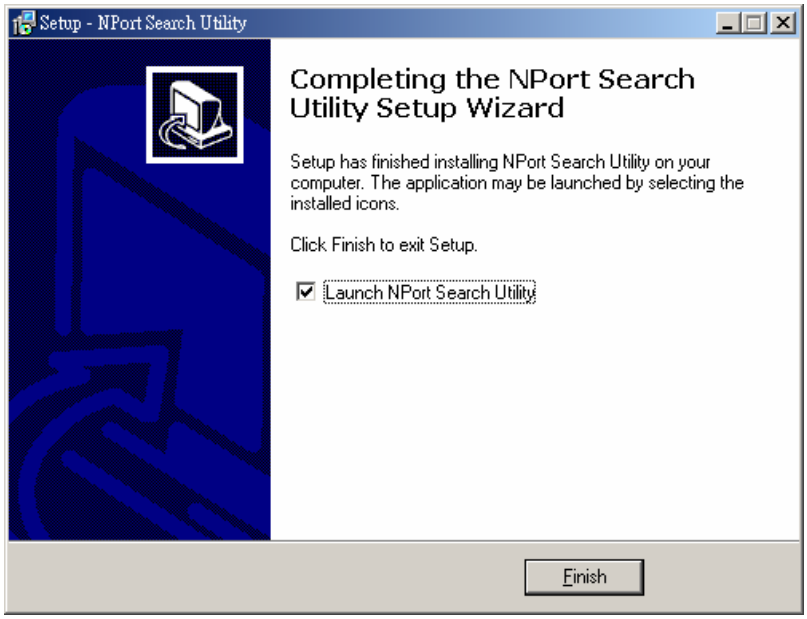
5. Click on **Next** to install the program's shortcuts in the **NPort Search Utility** Start Menu folder.


Setup - NPort Search Utility
Select Start Menu Folder
Where should Setup place the program's shortcuts?
Select the Start Menu folder in which you would like Setup to create the program's shortcuts, then click Next.
NPort Search Utility

6. Click on **Install** to proceed with the installation.


Setup - NPort Search Utility
Ready to Install
Setup is now ready to begin installing NPort Search Utility on your computer.
Click Install to continue with the installation, or click Back if you want to review or change any settings.
Destination directory:
C:\Program Files\NPortSearch
Start Menu folder:
NPort Search Utility
< Back
Install
Cancel

7. The Installing window will report the progress of the installation.
8. Click on **Finish** to complete the installation of the NPort W2250/W2150 Search Utility.


Setup - NPort Search Utility
Completing the NPort Search Utility Setup Wizard
Setup has finished installing NPort Search Utility on your computer. The application may be launched by selecting the installed icons.
Click Finish to exit Setup.
Launch NPort Search Utility
Finish

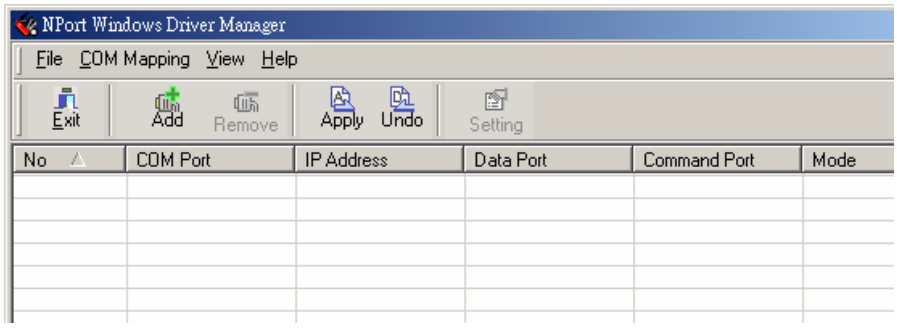
Configuring NPort COM Driver

The **NPort COM Driver** utility installs Real COM drivers that work under Windows 98/ME/2000/XP/2003. After you install NPort COM Driver, you can set up the NPort W2250/W2150's serial ports as remote COM ports for your PC host.

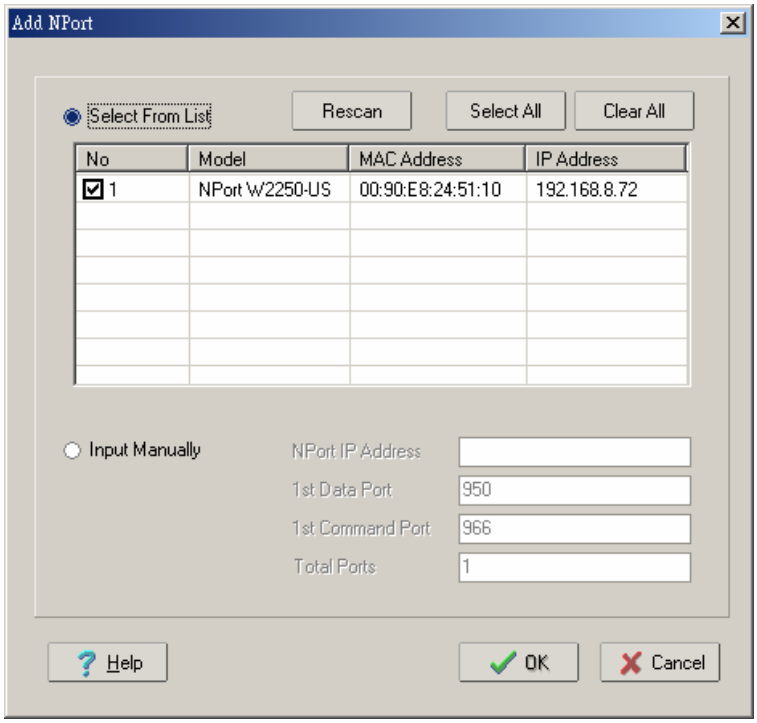
Use the following steps to map the COM ports:

1. Click on **Start → Programs → NPort Windows Driver Manager → NPort COM Mapping Utility** to start the COM mapping utility.

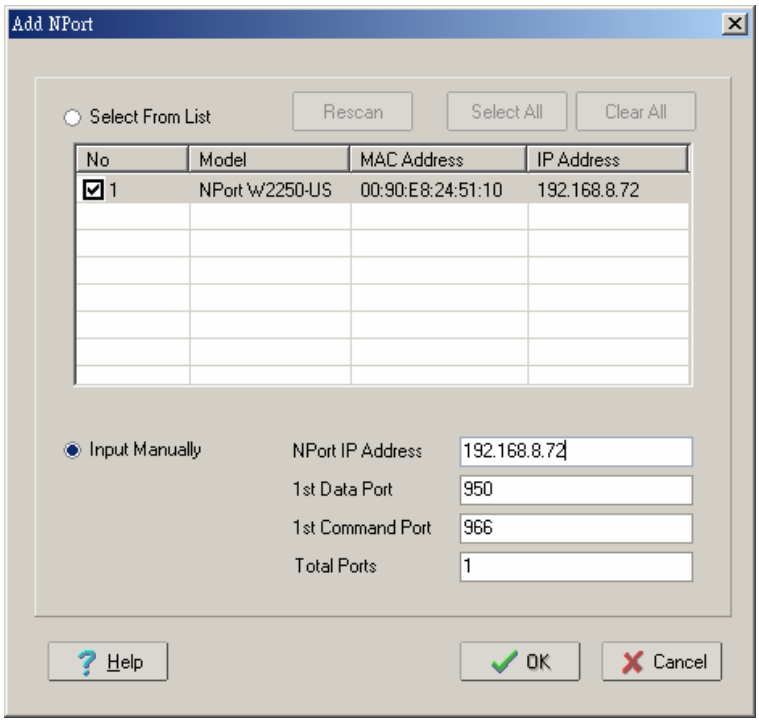
2. Click on the **Add** icon.



3. Click on **Rescan** to search for NPort device servers, select the server you would like to map COM ports to, and then click on **OK**.

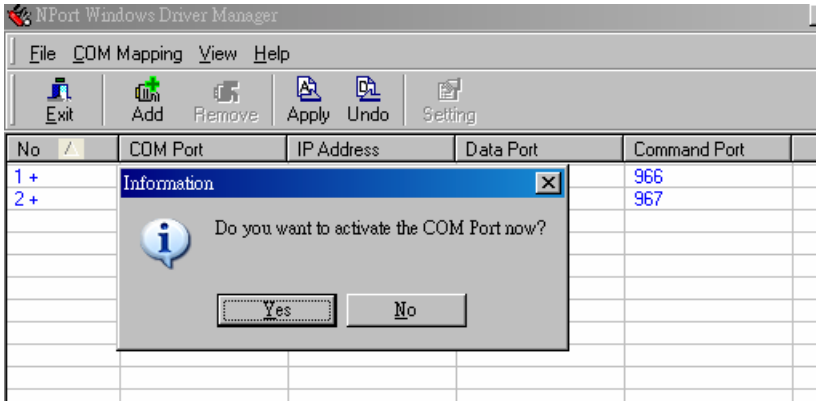


4. Alternatively, you can select **Input Manually** and then input the **NPort IP Address**, **1st Data Port**, **1st Command Port**, and **Total Ports** for the NPort W2250/2150 that you would like to map COM ports to. Click on **OK** to proceed to the next step.

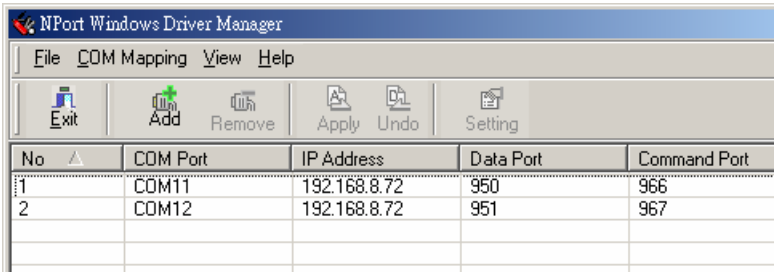


5. Click on **Yes** to activate the COM ports at this time, or click on **No** to activate the COM ports later. Activating the COM ports saves the information in the host system registry. The host

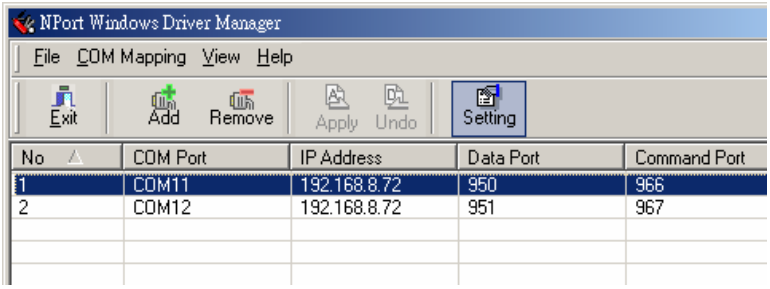
computer will not have the ability to use the COM port until you click on the **Apply** icon.


NPort Windows Driver Manager
File COM Mapping View Help
Exit Add Remove Apply Undo Setting
No COM Port IP Address Data Port Command Port
1 + 966
2 + 967
Information
Do you want to activate the COM Port now?
Yes No

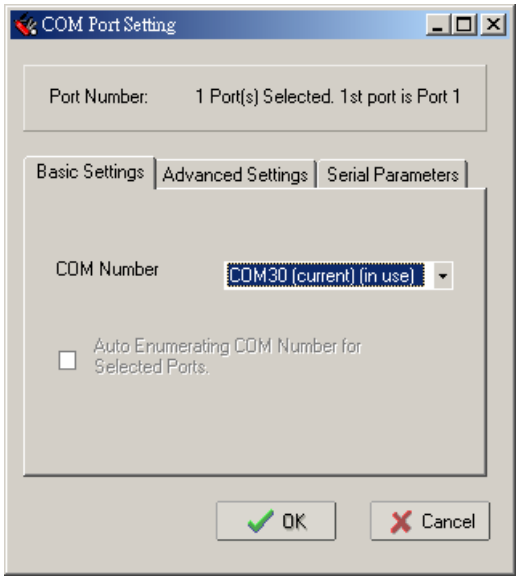
6. The display text corresponding to NPorts whose ports are activated will change from blue to black.


NPort Windows Driver Manager
File COM Mapping View Help
Exit Add Remove Apply Undo Setting
No COM Port IP Address Data Port Command Port
1 COM11 192.168.8.72 950 966
2 COM12 192.168.8.72 951 967

7. To re-configure the settings for a particular NPort, click on the row corresponding to that NPort to highlight it, and then click on the **Setting** icon.


NPort Windows Driver Manager
File COM Mapping View Help
Exit Add Remove Apply Undo Setting
No COM Port IP Address Data Port Command Port
1 COM11 192.168.8.72 950 966
2 COM12 192.168.8.72 951 967

8. In the **Basic Setting** panel, use the **COM Number** drop-down list to select a COM number for the NPort's first serial port. Since NPort W2250 has two ports, you can check mark the **Auto Enumerating COM Number for Selected Ports** checkbox to automatically assign the next available COM number to the second serial port. Note that ports that are "in use" will be labeled accordingly.



Click on the **Advanced Setting** tab to modify **Tx Mode**, **FIFO**, and **Flash Flush**.

Tx Mode

Hi-performance mode is the default for Tx mode. When the driver finishes sending data to the NPort W2250/W2150, the driver will issue a "Tx Empty" response to the program.

Under **classical mode**, the driver will not notify the user's program that Tx transmission is finished until all Tx data has been sent out from the NPort W2250/W2150. This ODE will cause lower throughput. Classical mode is recommended if you want to ensure that all data is sent out before further processing.

FIFO

If the FIFO is **Disabled**, NPort W2250/2150 will transmit one byte each time the Tx FIFO becomes empty, and an Rx interrupt will be generated for each incoming byte. This will result in a faster response and lower throughput. If you want to use XON/XOFF flow control, we recommend setting the FIFO to Disable.

Fast Flush (only flushes the local buffer)

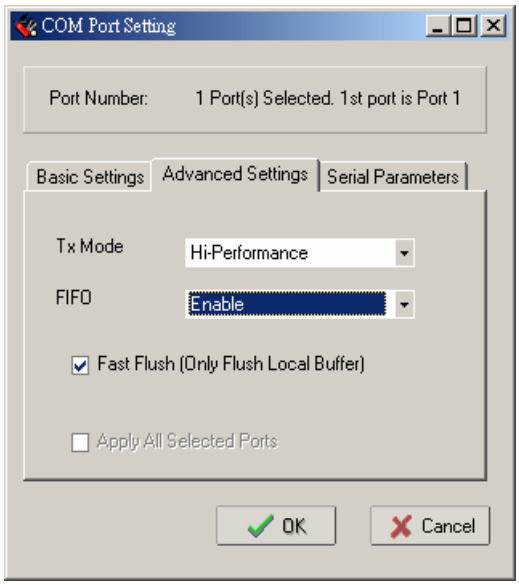
a. We have added one optional Fast Flush function to Moxa's new NPort Real COM driver.

b. For some applications, the user's program will use the Win32 "PurgeComm()" function before it reads or writes data. With our design, after the program uses this Purge Comm() function, the NPort driver will keep querying NPort's firmware several times to make sure no data is queued in the NPort firmware buffer, rather than just flushing the local buffer. This kind of design is used to satisfy some special considerations. However, it might take more time (about several hundred milliseconds) than a native COM1, because it needs to work via Ethernet. That's why the native COM ports on the motherboard can work fast with this function call, but NPort requires much more time. In order to accommodate other applications that require a faster response time, the new NPort driver implements a new "Fast Flush" option. Note that by default, this function is disabled.

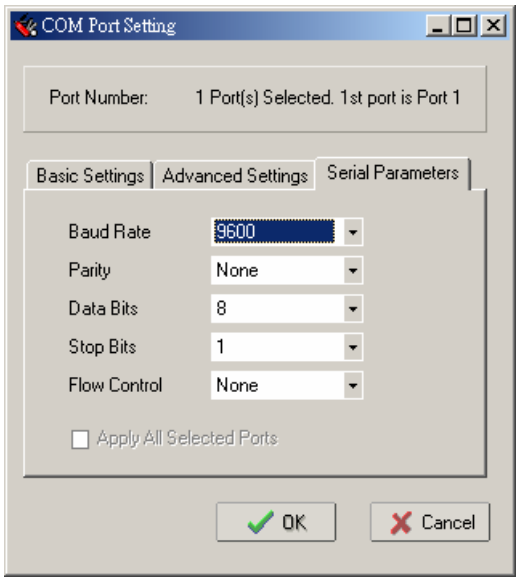
c. To begin with, make sure there are some "PurgeComm()" functions being used in your application program. In this kind of situation, you might find that your NPort exhibits a

much poorer operation performance than when using the native COM1 port. Once you have enabled the "Fast Flush" function, you can check to see if there has been an improvement in performance.

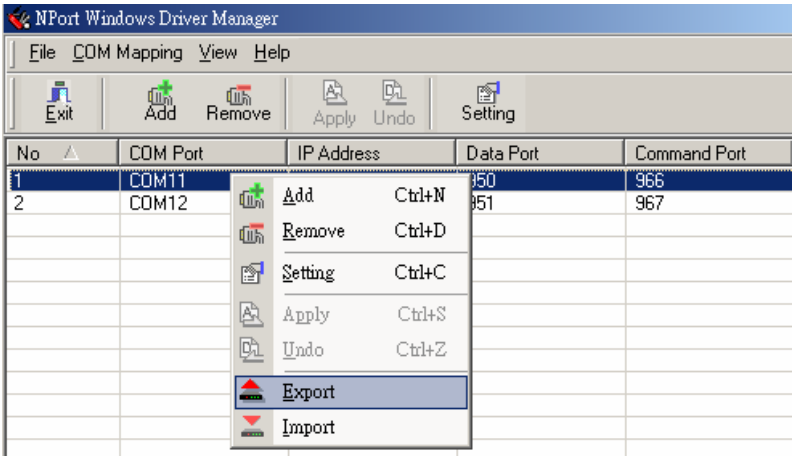
d. By default, the optional "Fast Flush" function is **Enable**. If you would like to enable this function, double click on the COM ports that are mapped to the NPort, and then select the "Fast Flush" checkbox. You should find that when "Fast Flush" is enabled, the NPort driver will work faster with "PurgeComm()."



9. The program can redefine the serial parameters to different values after the program opens the port via Win 32 API.



10. To save the configuration to a text file, select Export COM Mapping. You will then be able to import this configuration file to another host and use the same COM Mapping settings in the other host.

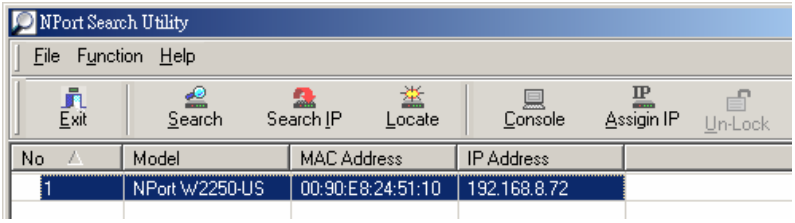


Configuring NPort Search Utility

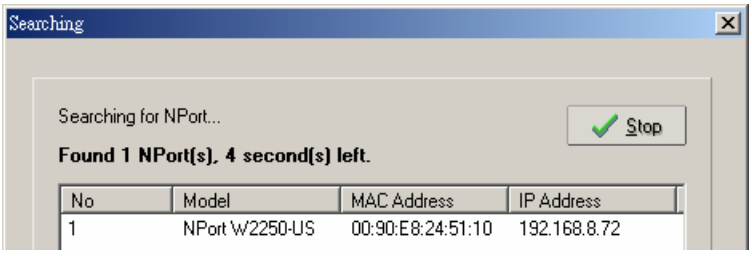
The Broadcast Search function is used to locate all NPort W2250/2150s that are connected to the same LAN as your computer. After locating an NPort W2250/2150, you will be able to change the IP address.

Since the Broadcast Search function searches by MAC address and not IP address, all NPort W2250/W2150s connected to the LAN will be located, regardless of whether or not they are part of the same subnet as the host.

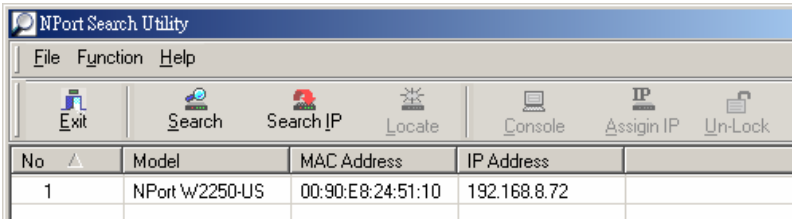
1. Open the **NPort Search Utility** and then click on the **Search** icon.


NPort Search Utility
File Function Help
Exit Search Search IP Locate Console Assign IP Un-Lock
No Model MAC Address IP Address
1 NPort W2250-US 00:90:E8:24:51:10 192.168.8.72

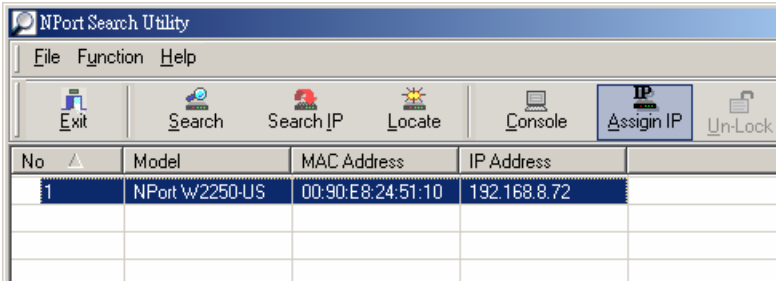
2. The **Searching** window indicates the progress of the search.



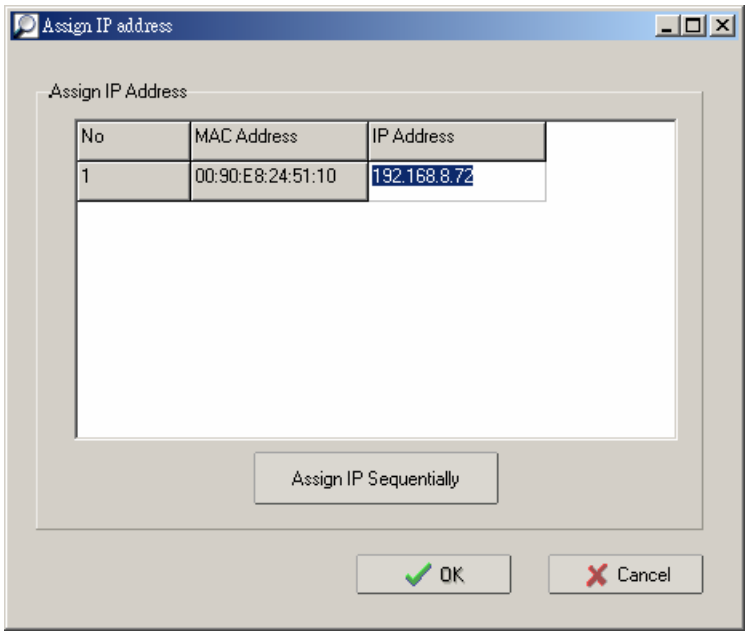
3. When the search is complete, the NPort W2250/2150 units that were located will be displayed in the NPort Search Utility window.


NPort Search Utility
File Function Help
Exit Search Search IP Locate Console Assign IP Un-Lock
No Model MAC Address IP Address
1 NPort W2250-US 00:90:E8:24:51:10 192.168.8.72

4. Click on the **Assign IP** icon to change the IP address of the active link (either the Ethernet LAN IP or the WLAN IP will be changed, depending on which one is currently active).



5. Type in the new IP address.



Linux Real TTY and UNIX Fixed TTY Installation

Installing the Linux Real TTY driver

Procedure

To map an NPort serial port to the host's tty port, you need to:

1. *Set up NPort*
   Make sure the IP configuration is ok and you can access the NPort (ping, telnet...) successfully, and then configure the NPort serial port to **Real COM Mode**.
2. *Install driver files on the host*
   Refer to "Installing the Driver File" below for details.
3. *Map the NPort serial port to the host's tty port*
   Refer to "Mapping TTY Ports" below for details.

Hardware Installation

Before proceeding with the software installation, make sure you have completed the hardware installation, as described in an earlier chapter of this manual.

The default IP address of the Ethernet interface is 192.168.126.254 and the default IP address of the WLAN interface is 192.168.127.254..

NOTE After installing the hardware, you MUST configure the NPort operating mode to **Real COM Mode**.

Installing the Driver File

a. Copy the driver file from the product's CD-ROM or Moxa website.

b. Log in to the console as a super user (root).

c. Execute **cd /** to change to the root directory.

d. Copy the driver file **npreal2xx.tgz** to the " / " directory.

e. Execute **tar xvfz npreal2xx.tgz** to copy all files into the system.

f. Execute **/tmp/moxa/mxinst**.

NOTE For RedHat AS/ES/WS and Fedora Core1, extra argument is needed: # /tmp/moxa/mxinst SP1

g. The shell script will install the driver files automatically.

After installing the driver, you will be able to see several files in the **/usr/lib/npreal2/driver** folder, including:

> mxaddsvr (Add Server, map tty port)
> mxdelsvr (Delete Server, un-map tty port)
> mxloadsvr (Reload Server)
> mxmknod (Create device node/tty port)
> mxrmnod (Remove device node/tty port)
> mxuninst (Remove tty port and driver files)

At this point, you will be ready to map the NPort serial port to the system tty port. See "Mapping TTY Ports" below for detailed instructions.

Mapping TTY Ports

Before mapping tty ports, you must set the operation mode of your NPort to **Real Com Mode**. We provide two ways to map tty ports.

a. Mapping tty ports automatically

After logging in as a super user, enter the directory **/usr/lib/npreal2/driver** and then execute **mxaddsvr** to map the target NPort serial port to the host tty ports. The syntax of **mxaddsvr** is:

```
mxaddsvr [NPort IP Address] [Total Ports] ([Data port] [Cmd port])
```

Example 1:

```
# cd /usr/lib/npreal2/driver
# ./mxaddsvr 192.168.3.4 16
```

Example2:

```
# cd /usr/lib/npreal2/driver
# ./mxaddsvr 192.168.3.4 16 4001 966
```

In Example 1, 16 tty ports will be added, all with IP **192.168.3.4**, but with data ports equal to (950, 951, …, 965), and command ports equal to (966, 967, 968, …, 981).

In Example 2, 16 tty ports will be added, all with IP **192.168.3.4**, but with data ports equal to (4001, 4002, …, 4016), and command ports equal to (966, 967, 968, …, 981).

b. Mapping tty ports manually

After entering the directory **/usr/lib/npreal2/driver**, you can modify **npreal2d.cf** to map NPort serial ports to tty ports, and then execute **mxloadsvr** to activate the modifications.

The following tasks will be performed:

> Modify **npreal2d.cf**
> Create tty ports in the directory **/dev** with major & minor number configured in **npreal2d.cf**.
> Stop and then restart the driver.

Removing Mapped TTY ports

As with the "Mapping TTY Ports" task, we provide two ways to remove mapped tty ports:

a. Removing the mapped tty ports automatically

After logging in as root, enter the directory **/usr/lib/npreal2/driver** and then execute **mxdelsvr** to delete a server. The syntax of mxdelsvr is:

mxdelsvr [IP]

Example:

```
# cd /usr/lib/npreal2/driver
# ./mxdelsvr 192.168.3.4
```

If you don't include the IP address in the command line, a numbered list of IP addresses for servers currently installed, along with the total number of ports for each server, will be listed on the screen. To remove the tty ports for a particular server, type the number next to the server's IP address and then hit Enter. The following tasks will be performed:

> Modify the **npreal2d.cf**
> Remove the relevant tty ports in directory **/dev**
> Stop and then restart the driver.

b. Removing the mapped tty ports manually

After entering the directory **/usr/lib/npreal2/driver**, you can modify **npreal2d.cf** to delete servers and ports manually, and then execute **mxloadsvr** to activate the modifications.

TTY Naming Rule

The tty name of the real tty driver is configured in **npreal2d.cf**. The pre-defined tty name is **ttyrXX**, and the callout name is **curXX**. The naming convention is illustrated as follows:

NPort Server	TTY Name	Callout Name
1st (4port)	ttyr00 – ttyr03	cur00 – cur03
2nd (8port)	ttyr04 – ttyr0b	cur04 – cur0b
3rd (16port)	ttyr0c – ttyr1b	cur0c – cur1b
4th (8port)	ttyr1c – ttyr23	cur1c – cur23

NOTE Callout Device is obsolete in Linux 2.6. That is, you cannot open Callout Device in Linux 2.6.

Removing the Driver

Removing the driver will remove all driver files, mapped tty ports, and unload the driver. To do this, enter the directory **/usr/lib/npreal2/driver**, and then execute **mxuninst** to uninstall the driver. This program will perform the following tasks:

> Unload the driver.
> Delete all files and directories in "/usr/lib/npreal2"
> Delete directory "/usr/lib/npreal2"
> Modify the system initialization script file.

Installing the UNIX Fixed TTY Driver

Installation and Configuration

Step 1: Log in to UNIX and create a directory for the MOXA TTY. E.g., to create a directory named `/usr/etc`, execute the command:
```
# mkdir /usr/etc
```

Step 2: Copy `moxattyd.tar` to the `/usr/etc` directory by executing the commands:
```
# cp moxattyd.tar /usr/etc
# cd /usr/etc
```

Step 3: Extract the source code from the tar file by executing the command:
```
# tar xvf moxattyd.tar
```

The following files will be extracted:

```
README
moxattyd.c      --- source code
moxattyd.cf     --- an empty configuration file
Makefile        --- makefile
VERSION.TXT     --- fixed tty driver version
```

Step 4: Compile and Link

For SCO UNIX:
```
# make sco
```

For UnixWare 7:
```
# make svr5
```

For UnixWare 2.1.x, SVR4.2:
```
# make svr42
```

Step 5: Modify the configuration:
The configuration used by the moxattyd program is defined in the text file `moxattyd.cf`, which is in the same directory that contains the program `moxattyd`. You may use vi, or any text editor to modify the file. E.g.,

```
ttyp1 192.168.1.1 950
```

For more configuration information, look at the file `moxattyd.cf`, which contains detailed descriptions of the various configuration parameters.

NOTE The "Device Name" depends on the OS. See the "Device Naming Rule" section for more information.

Step 6: To start the `moxattyd` daemon after system bootup, add an entry into `/etc/inittab`, with the tty name you configured in `moxattyd.cf`. E.g.,

```
ts:2:respawn:/usr/etc/moxattyd/moxattyd –t 1
```

This completes the installation and configuration of MOXA TTY.

Device Naming rule

For UnixWare 7, UnixWare 2.1.x, and SVR4.2, use:
`pts/[n]`

For all other UNIX operating systems, use:
`ttyp[n]`

Starting moxattyd

Execute the command `init q` or reboot your UNIX operating system.

Adding an additional server

Step 1: Modify the text file `moxattyd.cf` to add an additional server. User may use vi or any text editor to modify the file. For more configuration information, look at the file `moxattyd.cf`, which contains detailed descriptions of the various configuration parameters.

Step 2 :Find the process id (PID) of the program `moxattyd`.

```
# ps -ef | grep moxattyd
```

Step 3: Update configuration of moxattyd program.

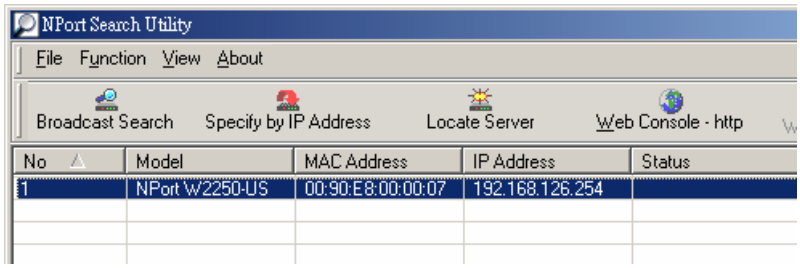
```
# kill -USR1 PID
```

(e.g., if "moxattyd" PID = 404, "kill -USR1 404")

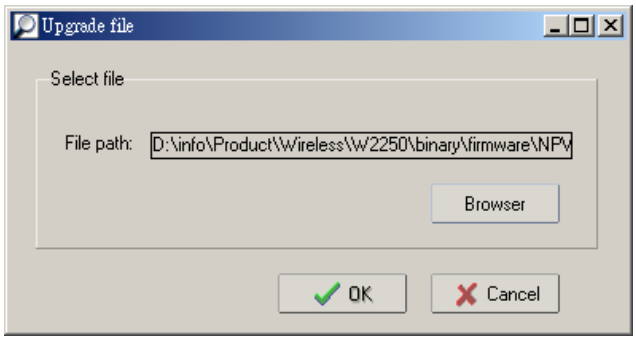
This completes the process of adding an additional server.

Upgrading the Firmware

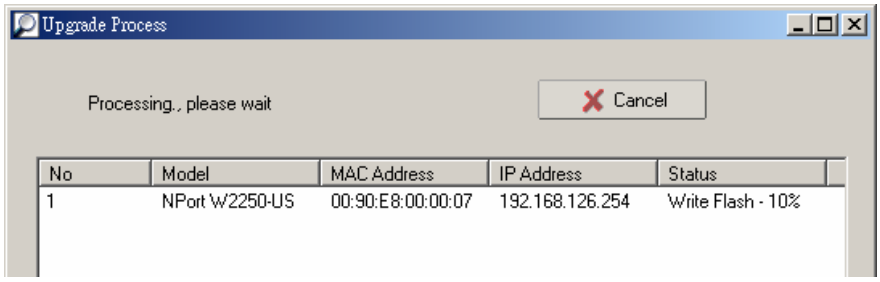
1. Start the **NPort Search Utility**, right click on a specific NPort W2250/2150, and then select the **Upgrade Firmware** option to start upgrading the firmware.



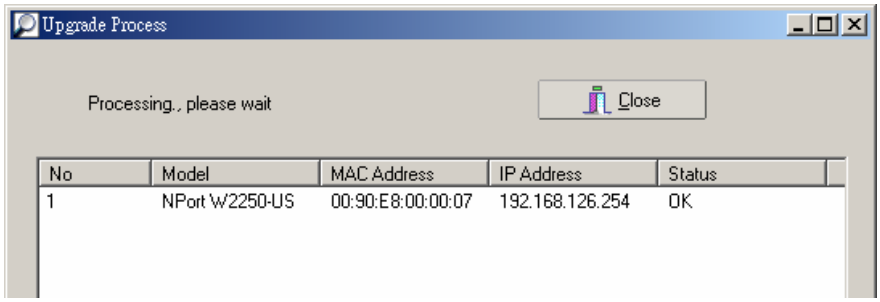
2. Select the correct ROM file to be downloaded to the NPort W2250/2150.



3. Wait patiently while the Upgrade Firmware action is processed.



4. Click on **Close** to finish upgrading the firmware.



ATTENTION

You can upgrade the firmware of multiple NPort W2250/2150s (that are of the same model) simultaneously. To select multiple NPort W2250/2150s, hold down the Ctrl key when selecting additional NPort W2250/2150s, or hold down the Shift key to select a block of NPort W2250/2150s.

A

SNMP Agents with MIB II & RS-232 Like Groups

NPort has built-in SNMP (Simple Network Management Protocol) agent software that supports SNMP Trap, RFC1317 RS-232 like groups and RFC 1213 MIB-II. The following table lists the standard MIB-II groups, as well as the variable implementation for NPort .

RFC1213 MIB-II supported SNMP variables:

System MIB	Interfaces MIB	IP MIB	ICMP MIB
SysDescr	itNumber	ipForwarding	IcmpInMsgs
SysObjectID	ifIndex	ipDefaultTTL	IcmpInErrors
SysUpTime	ifDescr	ipInreceives	IcmpInDestUnreachs
SysContact	ifType	ipInHdrErrors	IcmpInTimeExcds
SysName	ifMtu	ipInAddrErrors	IcmpInParmProbs
SysLocation	ifSpeed	ipForwDatagrams	IcmpInSrcQuenchs
SysServices	ifPhysAddress	ipInUnknownProtos	IcmpInRedirects
	ifAdminStatus	ipInDiscards	IcmpInEchos
	ifOperStatus	ipInDelivers	IcmpInEchoReps
	ifLastChange	ipOutRequests	IcmpInTimestamps
	ifInOctets	ipOutDiscards	IcmpTimestampReps
	ifInUcastPkts	ipOutNoRoutes	IcmpInAddrMasks
	ifInNUcastPkts	ipReasmTimeout	IcmpOutMsgs
	ifInDiscards	ipReasmReqds	IcmpOutErrors
	ifInErrors	ipReasmOKs	IcmpOutDestUnreachs

System MIB	Interfaces MIB	IP MIB	ICMP MIB
SysServices	ifInUnknownProtos	ipReasmFails	IcmpOutTimeExcds
	ifOutOctets	ipFragOKs	IcmpOutParmProbs
	ifOutUcastPkts	ipFragFails	IcmpOutSrcQuenchs
	ifOutNUcastPkts	ipFragCreates	IcmpOutRedirects
	ifOutDiscards	ipAdEntAddr	IcmpOutEchos
	ifOutErrors	ipAdEntIfIndex	IcmpOutEchoReps
	ifOutQLen	ipAdEntNetMask	IcmpOutTimestamps
	ifSpecific	ipAdEntBcastAddr	IcmpOutTimestampReps
		ipAdEntReasmMaxSize	IcmpOutAddrMasks
		IpNetToMediaIfIndex	IcmpOutAddrMaskReps
		IpNetToMediaPhysAddress	
		IpNetToMediaNetAddress	
		IpNetToMediaType	
		IpRoutingDiscards	

UDP MIB	TCP MIB	SNMP MIB
UdpInDatagrams	tcpRtoAlgorithm	snmpInPkts
UdpNoPorts	tcpRtoMin	snmpOutPkts
UdpInErrors	tcpRtoMax	snmpInBadVersions
UdpOutDatagrams	tcpMaxConn	snmpInBadCommunityNames
UdpLocalAddress	tcpActiveOpens	snmpInASNParseErrs
UdpLocalPort	tcpPassiveOpens	snmpInTooBigs
	tcpAttempFails	snmpInNoSuchNames
Address Translation MIB	tcpEstabResets	snmpInBadValues
AtIfIndex	tcpCurrEstab	snmpInReadOnlys
AtPhysAddress	tcpInSegs	snmpInGenErrs
AtNetAddress	tcpOutSegs	snmpInTotalReqVars

Address Translation MIB	TCP MIB	SNMP MIB
AtNetAddress	tcpRetransSegs	snmpInTotalSetVars
	tcpConnState	snmpInGetRequests
	tcpConnLocalAddress	snmpInGetNexts
	tcpConnLocalPort	snmpInSetRequests
	tcpConnRemAddress	snmpInGetResponses
	tcpConnRemPort	snmpInTraps
	tcpInErrs	snmpOutTooBigs
	tcpOutRsts	snmpOutNoSuchNames
		snmpOutBadValues
		snmpOutGenErrs
		snmpOutGetRequests
		snmpOutGetNexts
		snmpOutSetRequests
		snmpOutGetResponses
		snmpOutTraps
		snmpEnableAuthenTraps

RFC1317: RS-232 MIB objects

Generic RS-232-like Group	RS-232-like General Port Table	RS-232-like Asynchronous Port Group
rs232Number	rs232PortTable	rs232AsyncPortTable
	rs232PortEntry	rs232AsyncPortEntry
	rs232PortIndex	rs232AsyncPortIndex
	rs232PortType	rs232AsyncPortBits
	rs232PortInSigNumber	rs232AsyncPortStopBits
	rs232PortOutSigNumber	rs232AsyncPortParity
	rs232PortInSpeed	
	rs232PortOutSpeed	

The Input Signal Table	The Output Signal Table
rs232InSigTable	rs232OutSigTable
rs232InSigEntry	rs232OutSigEntry
rs232InSigPortIndex	rs232OutSigPortIndex
rs232InSigName	rs232OutSigName
rs232InSigState	rs232OutSigState

B

Well Known Port Numbers

This appendix is for your reference. Listed below are Well Known Port Numbers that may cause network problems if you configure NE-4000T for the same port. Refer to RFC 1700 for Well Known Port Numbers or refer to the following introduction from IANA.

The port numbers are divided into three ranges: the Well Known Ports, the Registered Ports, and the Dynamic and/or Private Ports.

- The Well Known Ports range from 0 through 1023.
- The Registered Ports range from 1024 through 49151.
- The Dynamic and/or Private Ports range from 49152 through 65535.

The Well Known Ports are assigned by IANA, and on most systems, can only be used by system processes or by programs executed by privileged users. The following table shows famous port numbers among the well-known port numbers. For more details, please visit the IANA website at http://www.iana.org/assignments/port-numbers

TCP Socket	Application Service
0	reserved
1	TCP Port Service Multiplexor
2	Management Utility
7	Echo
9	Discard
11	Active Users (systat)
13	Daytime
15	Netstat
20	FTP data port
21	FTP CONTROL port
23	Telnet
25	SMTP (Simple Mail Transfer Protocol)
37	Time (Time Server)
42	Host name server (names server)

TCP Socket	Application Service
43	Whois (nickname)
49	(Login Host Protocol) (Login)
53	Domain Name Server (domain)
79	Finger protocol (Finger)
80	World Wibe Web HTTP
119	Netword news Transfer Protocol (NNTP)
123	Network Time Protocol
213	IPX
160 – 223	Reserved for future use

UDP Socket	Application Service
0	reserved
2	Management Utility
7	Echo
9	Discard
11	Active Users (systat)
13	Daytime
35	Any private printer server
39	Resource Location Protocol
42	Host name server (names server)
43	Whois (nickname)
49	(Login Host Protocol) (Login)
53	Domain Name Server (domain)
69	Trivial Transfer Protocol (TETP)
70	Gopler Protocol
79	Finger Protocol
80	World Wide Web HTTP
107	Remote Telnet Service
111	Sun Remote Procedure Call (Sunrpc)
119	Network news Tcanster Protocol (NNTP)
123	Network Time protocol (nnp)
161	SNMP (Simple Network Mail Protocol)
162	SNMP Traps
213	IPX (Used for IP Tunneling)

C

Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-- Reorient or relocate the receiving antenna.

-- Increase the separation between the equipment and receiver.

-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-- Consult the dealer or an experienced radio/TV technician for help.

CAUTION:

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

FCC RF Radiation Exposure Statement

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator and your body.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference and

(2) This device must accept any interference received, including

interference that may cause undesired operation.

D

Service Information

This appendix shows you how to contact Moxa for information about this and other products, and how to report problems.

In this appendix, we cover the following topics.

- **MOXA Internet Services**
- **Problem Report Form**
- **Product Return Procedure**

MOXA Internet Services

Customer satisfaction is our number one concern, and to ensure that customers receive the full benefit of our products, Moxa Internet Services has been set up to provide technical support, driver updates, product information, and user's manual updates.

The following services are provided

E-mail for technical support.....support@moxa.com.tw

Moxa Group website for product information, driver downloads, documentation, and more:

.....http://www.moxa.com

Problem Report Form

MOXA NPort W2250/2150

Customer name:	
Company:	
Tel:	**Fax:**
Email:	**Date:**

1. **Moxa Product:** ☐ NPort W2250 ☐ NPort W2150
2. **Serial Number:** _____

Problem Description: Please describe the symptoms of the problem as clearly as possible, including any error messages you see. A clearly written description of the problem will allow us to reproduce the symptoms, and expedite the repair of your product.

Product Return Procedure

For product repair, exchange, or refund, the customer must:

- Provide evidence of original purchase.
- Obtain a Product Return Agreement (PRA) from the sales representative or dealer.
- Fill out the Problem Report Form (PRF). Include as much detail as possible for a shorter product repair time.
- Carefully pack the product in an anti-static package, and send it, pre-paid, to the dealer. The PRA should be visible on the outside of the package, and include a description of the problem, along with the return address and telephone number of a technical contact.